

# Audubon

SEPTEMBER-OCTOBER 1958

Magazine

ONE DOLLAR

PUBLISHED BY THE NATIONAL AUDUBON SOCIETY



THE MOOSE — page 210



**LEONARD HALL** has lectured for Audubon Screen Tours for ten years. In the intervals between tours, he has kept himself busy on his Ozark farm writing a nature column for the St. Louis Post Dispatch. He has had two books published (the latest, "Country Year", Harper's 1957) lectured and taught, made two nature films ("Pursuit of Summer" and "Running River"), and received Missouri's Master Conservationist Award and an honorary degree from Westminster College for "service and conservation". Leonard Hall has photographed bird, plant and animal life in the Ozarks, Everglades, Coastal Marsh, Chihuahuan Desert, and the West Coast from San Diego to Vancouver.

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*Leonard Hall*

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# Audubon magazine

Volume 60, Number 5, Formerly BIRD-LORE

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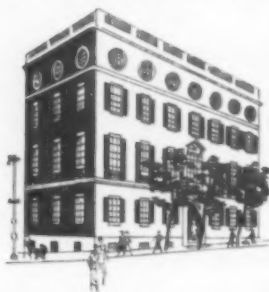
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## Letters

### Ten More Elephant Folios Located

As a postscript to my article, "The Elephant Hunter," published in this issue of *Audubon Magazine*, I thought your readers might like to know of our recent trip of 11,700 miles by auto, in which my wife and I traced ten more of Audubon's elephant folios. This brings the total to 89. Starting in March 1958, we traveled across the continent to California, up to Portland, Oregon, back to Texas, and then through the Gulf States and up the Atlantic coast to our home at Providence.

Our first stop in the Far West was the Huntington Library in Pasadena, California. This is a wonderful place to visit—Audubon Folio or not—although I do wish they would keep the folios on display where people can see them.

Next, we visited the University of Southern California which has a set that came all the way from the Boston Natural History Society. Before we saw the set in the state library at Sacramento, we were able to get some interesting information about the sets believed to have been destroyed by the earthquake and fire in San Francisco, April 18, 1906, which burned over four square miles and caused the death of about 500 people.

At Portland, Oregon, looking through the Ornithological Biography which accompanies the folios, we found a clipping which we help us trace this set to the original subscriber.

In Orange, Texas, we visited a gentleman—J. Luther Stark—who has the most amazing private collection of Auduboniana we know of. He not only has the five-volume folio set which belonged to the Audubon family, and contains several "experimental plates," but he also has the single Volume I that Audubon carried with him when he was soliciting subscribers. Audubon presented this volume to the John Bachman family of Charleston, South Carolina, in 1834.

These are only a few of our recent experiences in tracing the existing elephant folios of Audubon's "Birds of America."

W. H. FRIES

Little Compton, Rhode Island

### One-Legged Shorebird

There have been a number of letters published in *Audubon Magazine* about one-legged birds. Perhaps another will not be amiss.

I winter at Delray on the east coast of Florida and see many shorebirds. For



three winters a group of us watched a one-legged sandpiper. He was slower than the others, but never was caught in a wave. He was well-fed and in good condition. We missed our little friend the fourth year.

Thank you for the *Audubon Magazine*.  
MARY C. NISBET  
Irvington-on-Hudson, New York

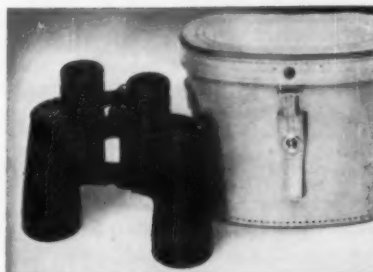
#### Catbirds and Cake

On the garden terrace of my sister's home in Bronxville, New York, a pair of catbirds made their nest for several years. As tea was always served on the terrace, the birds had to be watched or one would fly down and grab a piece of cake to take to its nestlings. One summer, after the catbirds had arrived, my sister held a piece of cake out on her hand and one of them came at once and alighted on her hand. It looked at the cake but had a beakful of worms. Should it drop the worms and take the cake? It cocked its head first one way then the other while we waited. Then it laid the worms down on my sister's hand, took the cake and flew off to its nest but soon returned for the worms. I could imagine my sister's feelings, for she is a most fastidious person, but fortunately the nest was near and the wiggling worms were soon removed.

*Turn to next page.*

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by the bird for the next meal. Who said a bird does not think?

One spring day, a tufted titmouse that had fed at our feeding tray all winter found me sitting on the terrace. At once it alighted on the arm of my chair and jumped to my head. There it pulled out some of my white hairs which evidently were just what she needed for her nest!

MRS. CHARLES I. MARVIN

Charlottesville, Virginia

## Backward Flight of English Sparrow

I have noted with interest, at my feeder, the ability of English sparrows to fly backwards as well as forwards. I thought hummingbirds were the only birds capable of this. The feeder is a circular, self-dispensing type on a post, presenting a rather narrow perching ridge under its roof. English sparrows repeatedly fly backwards six inches to a foot, while one flew backwards three or four feet to a nearby crab branch.

MRS. JOHN McEWAN

Milwaukee, Wisconsin

## A Tired Myrtle Warbler

While cruising westward some five miles offshore on the Gulf of St. Lawrence in the Jacques Cartier Passage at



about 6 a.m. in early September, 1957, I noticed a small bird struggling in flight against a light offshore breeze to reach my boat. The bird was in a condition bordering on extreme exhaustion and was barely able to clear the gun-whale and alight. When it did, it landed on my arm and clung there for several minutes. When it had sufficient strength, it climbed to my shoulder and eyed me suspiciously. Apparently reassured, it promptly fell asleep. I headed my boat shoreward while the myrtle warbler slept, and when it awoke after about 11 minutes I was close enough to the land to follow its flight through a binocular and to see that it reached there safely.

Apparently, this warbler had overshot the coast during night migration and might not have had the endurance to make it back to land without its rest on my cruiser. MITCHELL CAMPBELL

Montreal, Quebec, Canada

## A Persistent Pheasant

Perhaps your readers will be interested in our experience in May 1958 in a field outside of Redford Township near Detroit, Michigan.

While looking for a lost arrow during a target practice session with my family we flushed a hen pheasant from her nest at the edge of a small pile of brush. Our three children were very interested in the seven eggs the nest contained. We cautioned them not to touch the eggs, and after looking a short while we left the site.

Several days later we returned to find the nest unattended. It worried us a little until we heard a pheasant call in the woods nearby. We returned to our car, and presently saw a hen pheasant flying back and forth at the edge of the woods about 75 yards from our car. By this time it had started to rain. The chil-

Continued on page 201



# Bird Photography is Never Dull

By Russ Kinne

**B**IRDS are the favorite subjects of nature photographers, for several obvious reasons. They are found practically everywhere and in a limitless variety of sizes, shapes, and colors. Many venture in to feeding stations where they can be observed and photographed easily. Probably more pictures are made of birds feeding than any other kind.

Bird photography is sometimes simple as snap-shooting, at other times practically impossible. Semi-tamed birds in a park or at a well-established feeding station may pay little attention to a photographer moving about only ten feet away from them. In other areas, birds will flare off immediately at the slightest sign of a human.

On one occasion, the bird photographer will be comfortable, dry, on solid ground, and only a short distance from home. At other times, he may be hip-deep in swamp-muck, swatting mosquitoes, or sweating it out in a stuffy blind for seemingly endless hours. At still other times he will be found lugging heavy gear for miles up a mountain trail, trying to get within a quarter-of-a-mile of an eagle's nest. In any event, you will come to agree with experienced bird photographers that bird photography is never dull.

## Long Lenses Ideal

Most bird photography falls into either of two categories, telephoto or remote-control. Sometimes there will be a combination of both. The cry, "Oh, for a longer lens!" is the universal lament of the photographer, for seldom does he feel that his lens is long enough when pursuing an elusive bird.

The merit of the telephoto lens is its ability to provide a large image of distant subjects. The size of this image bears a direct relationship to the focal length of the lens. Thus, a four inch lens will give twice as big an image as a two inch lens, and an eight inch lens will provide an image four times as large.

Telephoto lenses, however, are not without their disadvantages. Their greater size makes handling a problem, particularly with longer focal lengths, since "wobble" is magnified as the size of the image increases. Sturdy tripods must be used. Focusing is critical and cannot be accomplished as quickly as with normal focal length lenses.

Remote-control photography enables the bird photographer to operate his

camera from distances of only ten or twenty feet up to distances of a mile or more from the camera itself, using wires or radio control. And, of course, he may combine the two types of photography by placing a telephoto lens on his camera and operating it remotely.

In my bird photography, I use the Praktina FX single-lens mirror-reflex camera. This camera is recognized by experts as the ideal instrument for telephoto or remote-control photography. It is in universal use by nature pho-



Author Russ Kinne with his Praktina FX camera

Russ Kinne, author of this series of articles on nature photography, has been a photographer since he was eight years old. He was a photographer for the Navy and is currently a free-lance photographer, writer, and lecturer whose work appears in many national publications. These include such magazines as Audubon Magazine, Animal Kingdom, Field & Stream, Sports Afield, Popular Photography, Popular Boating, Holiday, This Week, True, Fortune, and many others. He has made pictures throughout the United States, and in the Bahamas, the Caribbean, Central America, Canada and Alaska. The major part of the 11,000 color transparencies which he has taken in the past 3½ years have been produced with his 2 Praktina cameras and their accessories.

tographers and for sports and news photography by the major wire services, since it can be used with long telephoto lenses up to 2000 mm. or more in focal length.

Only a single-lens mirror-reflex, which uses the same lens for picture-viewing and picture-taking, shows you exactly what you will get in the final print. It shows you the exact depth-of-field and the effects of different filters. It eliminates parallax error, which causes chopped-off heads or feet in snap-shooting, because what you see is what you get. That is the basic reason why many professional and amateur photographers prefer the single-lens mirror-reflex, such as the Praktina FX camera, not only for nature subjects but, as time goes by, for every type of photography.

## Wing-Shooting

Most of my bird work is done with the 150mm and 300mm telephoto lenses. The Recessed Bayonet-mount of the Praktina FX allows me to change lenses in seconds. Sturdy construction facilitates hand-held flight shots, even with the 300mm lens, at speeds of 1/200 second, or even 1/100 second if you've learned the art of holding your camera steadily while shooting pictures.

With either the 150mm or 300mm lens, flight shots in color can be made easily. Wing-shooting is the bird photographer's art, and the Praktina FX is admirably well suited for it when fitted with the Penta-prism Eye-level Viewfinder and plain ground-glass. The important things to master in this virtuoso photographic technique are the swing and the follow-through. You must swing the camera in the direction of motion of the bird, and you must continue to follow through after the shutter is released.

A hunter-turned-photographer has an advantage in following through instinctively, but will often make the mistake of "leading" the bird as he would with a gun. The result is a clear picture of the sky with the bird's head entering the picture from one side!

With practice, you can master this technique, which will give you some of your most attractive and appealing photographs of birds. In time you will also become adept at changing focus as you track the bird in flight.

Another Praktina FX accessory, the easily-attached Rapid-Sequence Spring Motor, has the further advantage of making it possible for you to make



Barn Owl. Praktina FX, 300mm telephoto lens. Electronic flash at  $1/8$ ,  $1/100$  second.

eight or more quick exposures as birds fly in to land or as they take off. A series of eight or ten pictures made in rapid sequence will show how birds fly, land, and rise, and there will always be one shot of a series that will prove better than the rest—often the one shot you will miss while trying feverishly to wind your conventional camera by hand. With the Praktina FX and its fast-acting Spring Motor attachment, you will always be ready for the unexpected and unusual motion and have the best opportunity to capture it on film.

### Approaching Birds

Here are some pointers to keep in mind while perfecting your wing-shooting. When birds are coming in too fast to change focus, prefocus at a certain distance, follow the birds in the viewfinder, and expose when they come into your area of sharp focus. With waterfowl, and your 300mm lens on the camera, your focusing distance will generally be from 50 to 80 feet—if the birds ever come that close to you!

Especially good spots for flight photography are federal and state wildlife refuges, or any body of water where ducks and geese are known to breed, winter, or stop during migration. Often, you can find a natural flyway between feeding grounds and roosting or resting areas where you can conceal yourself while waiting for the birds to fly directly overhead.

Wear drab clothing to match the dark background, utilize existing natural cover as much as possible, and sit very still! The sensitivity of a bird, particularly one who has had his tailfeathers riddled with #6 shot, is such that he will detect your slightest motion and flare off before you can shoot.

Seldom will birds let you approach

Canada Geese in flight. Rapid-sequence series made with Praktina FX camera





them. The thing to do is have them come to you. A good technique you can use, when you know that birds feed regularly in a certain area, is to build a blind. This may consist of anything from a small tent to a few yards of burlap, strung on poles and bushes to cover you as you lie prone. Keep in mind, though, the bigger you make the blind, the longer it will take the birds to get used to it.

Whenever possible, erect your blind a few days before you take your pictures. Very often, you will have to build the blind at a distance and move it slightly closer every day until you are as close as you want to be. Some wary birds will not even approach it then, unless they see someone leave the blind. However, the fact that two people entered the blind and only one walks away doesn't seem to bother them! Be prepared to enlist the services of a friend in a situation such as this.

*In all cases, make the welfare of your subjects a primary concern, and pass up pictures if there appears to be danger of causing birds to desert their nests. Bird photography is a fine sport and a valuable method of study. Don't turn it into a form of destruction.*

### Some Other Tricks

It is a good idea, when working in populated areas, to erect a sign saying, "Photographer's Blind—Please Stay Away!" Most people will respect it and stay away, although you may occasionally find yourself meeting some curious person eyeball to eyeball through your viewfinder despite everything you can do.

To photograph colonies of ground-nesting birds such as gulls or terns, tie burlap to a stick about four feet long. Secure the stick across your shoulders with enough loose material to hang



**Black-necked Stilt. Praktina FX with 300mm lens. 1/100 second at f/5.6.**

with Spring-Motor attachment, using 300mm lens. 1/500 second at f/8.



over your head and face and down to your feet in back. This will disguise you adequately, since the most alarming sight for a bird appears to be the form of a human being. With just such an outfit, a famous motion-picture cameraman has filmed the entire life story of terns in a colony, at distances of about ten feet. One more small word of advice. Wear an old raincoat for this kind of a job, and cover your camera with plastic bags.

I've discussed now only a few aspects of bird photography, but it may already be apparent that the bird photographer who knows something of the habits of birds will have a considerable edge over the uninformed enthusiast. The most successful bird-watchers are those who learn the food and habitat preferences, general behavior, and migration and nesting schedules of the birds in which they are interested. This knowledge is not only useful but very often indispensable when it comes to capturing birds on film. It will also increase immensely the enjoyment you will get from photographing birds.

To help you in selecting likely spots for bird photography in the United States, consult "A Guide to Bird Finding," by Olin Sewall Pettingill (Oxford University Press). The Audubon Bird Guides, by Richard H. Pough, will prove very useful in supplying information on bird habits. Discussion with local bird-watchers, membership in the National Audubon Society, and following the articles in *Audubon Magazine*, are all excellent ways to increase



Canada Geese in flight. Praktina FX, 300mm lens, 1/500 second at f/8.

your knowledge and likelihood of success as a bird photographer.

In the future, we will go into the

techniques of photographing birds under other conditions, as well as other wildlife subjects. See you soon!

**STANDARD CAMERA CORPORATION 319 Fifth Avenue, New York 16, N. Y.**

Mourning Dove. Praktina FX with 300 mm lens, 1/100 second at f/5.6.



**LETTERS** — Continued from page 196

dren became worried when we told them she would have to hurry back to her nest to keep the eggs from cooling off. Suddenly the pheasant flew out of the woods and dropped straight to the ground in the tall weeds. We watched quietly and could see her occasionally making a hurried dash around us. She scurried across a narrow dirt road and ran boldly through the weeds taking what cover she could but heedless of danger to herself. She worked her way around to a point in the back of the brush pile where we couldn't see her. A few seconds went by, and we could see no perceptible movement of the weeds. It was raining harder now. Suddenly she appeared around the brush pile for a second and then was out of sight as she squatted down on her nest. It was a bold and skillful maneuver. The children were relieved and will always remember the daring of that little hen pheasant returning to her nest regardless of possible danger to herself.

DEAN W. WALTON

Detroit, Michigan

**Liked Our Bluebird Article**

We are proud of our Wayne Short of St. Louis, who instituted the fine Screen Tour lectures in our city.

I enjoy all articles and letters in your great magazine and was particularly interested in "The Bluebird That Couldn't Remember," by Ruth Thomas, published in your May-June 1958 issue. I had the pleasure of visiting Mrs. Thomas and her late husband, who was with the *Arkansas Gazette*. Mrs. Thomas did some interesting nature writing for this paper, and may still write for it. I also enjoyed her story about Crip, the brown thrasher, published in the May-June 1950 issue of *Audubon Magazine*. I met this thrasher personally. While I was in the service at Camp Robinson, Little Rock, Arkansas, in World War II, I was a guest in the Thomas home.

J. EARL COMFORT

St. Louis, Missouri

**A Boy's Future**

My ten-year-old son Jimmy is keenly interested in the study of birds and I have tried to encourage him. For his last birthday we gave him a set of the Audubon bird guides. He enjoys them immensely.

Jimmy read your hawk article reprinted in the *Reader's Digest* (June 1958) and asked me to write for the leaflets mentioned in the article. Would you please send them?

Would you please send, also, information on how we might subscribe to *Audubon Magazine* and tell me if there is a bird club in this vicinity that he

might join when he is older. We are poor people but we feel we owe it to our son to help him fulfill his ambition to be an ornithologist someday. We plan to give him a pair of moderately-priced binoculars for his next birthday. Can you suggest a type that would be effective (what power) and yet durable for a ten-year-old boy?

I am learning about birds from Jimmy. We went hiking last Saturday and he identified about a dozen different kinds for me.

MRS. WILLIAM LEE

George's Trailer Park  
Mounted Route  
Camp Hill, Pennsylvania

**Comment**

We sent Mrs. Lee the information she requested, also some complimentary copies of *Audubon Magazine*, copies of the hawk leaflets, and other materials about birds. It is this kind of an appeal that makes us wish we could do more to encourage people like Mrs. Lee, and to help her in her earnest desire to have ten-year-old Jimmy realize his dream of becoming an ornithologist. Perhaps some of our readers may want to write to Mrs. Lee and offer her suggestions about preparing Jimmy for his career.—The Editor

Continued on next page.

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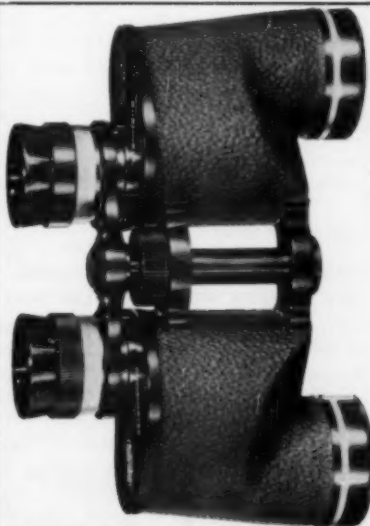
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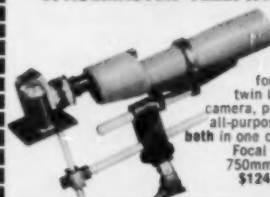
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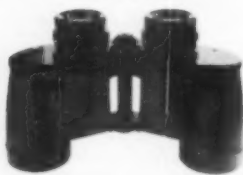
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### Birthday Gift in Advance

As the last thing that he did before leaving for church camp one morning, in June 1958, my 13-year-old son handed me three dollars and said, "I know it isn't right for you to know how much your birthday gift costs, but will you send this in for me?"

This will be the third year that my son has given me *Audubon Magazine* as a birthday gift. We all read it from cover to cover and find much in it for family discussion at the dinner table. We think it a fine publication, and we have all learned a great deal by using it as our textbook.

Mrs. ROCKWELL BINGHAM  
Bristol, Tennessee

### Liked the May-June Issue

Mrs. Donahue and I have received the May-June 1958 issue of *Audubon Magazine*, have read it through, and we think it superb.

Of special interest was the cover picture of the bluebird by Don Wooldridge who, we believe, must be our own Don Wooldridge, photographer of the Missouri Conservation Commission, at Jefferson City, Mo. [Right! Ed.] The only way the picture could have been better, we thought, was to have been taken and reproduced in color.

Beginning with Charles E. Mohr's story, "The Audubon Center of Connecticut," and including the informative Part I of Frank A. Tinker's "Avian Botulism," through Peter Farb's fine story on hawks (a condensed version of which appeared in the June issue of *Reader's Digest*, much to the credit of the magazine), to Ida Smith's "The Green Fig-eater," we would say the May-June issue was the best yet. Your reproduction of pictures is excellent.

RALPH J. DONAHUE  
Merriam, Kansas

### Saw-whet Owls Killed by Traffic and Pileated Woodpeckers at Suet

We have been very much interested in the two recent letters in *Audubon Magazine* regarding the traffic-kill of birds. Perhaps another, with a happier ending, will not be out of place.

Four years ago, in our Dublin, New Hampshire area, we began hearing of cars striking owls at night, and each succeeding year similar accidents have occurred in the late fall and winter. In those of which we know where the drivers stopped and picked up the owls and took them home, the owls recovered and flew away. As we have heard of no other species of owl being struck here, we can only conclude that in this area, the saw-whet may be more attracted to highways, or to the glare of headlights, than are other species of owls. Incidentally, these reports show the saw-

Continued on page 239

### New Membership Rates

Fifty-three years ago, when your Society was organized, the membership dues were set at \$5.00. Since then we have never increased the minimum dues. Quite a record!

But, as everyone knows, operating costs have grown enormously since 1905. Membership organizations of all kinds have raised their dues, most of them several times. Up to now, we have held the line.

The Board of Directors, in recognition of the prevailing levels of prices and costs, their continuing upward trend, and of the urgent needs in financing the Society's growing program, has voted to increase membership dues in Regular, Sustaining, and Life membership categories, but only slightly. It has voted to establish husband-wife memberships in the Regular and Sustaining categories, heretofore available only to branch members; in these two categories only one copy of the *Audubon Magazine* will be mailed to the joint address. The new rates apply to all memberships renewable in September 1958 and thereafter. They are listed below.

We know that you will understand the need and wisdom of the action taken, and trust that you will wish to continue your deeply appreciated support and encouragement as expressed through membership.

JOHN H. BAKER,  
President

#### Membership

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| Life                        | 300.00  |
| Affiliated Clubs            | 15.00   |

(The new rates shown above will appear on the renewal notice sent to all members when each renewal is due.)

#### Subscription

For reasons similar to those set forth above with regard to membership dues, subscription rates for *Audubon Magazine* have also been increased effective September 1, 1958. The new subscription rates are:

|        | Individual | Institution | Foreign |
|--------|------------|-------------|---------|
| 1 yr.  | \$ 5.00    | \$ 4.00     | \$5.00  |
| 2 yrs. | 9.00       | 7.00        | —       |
| 3 yrs. | 12.00      | 11.50       | —       |



# Falcon in the Sky\*

By J. J. Murray

WE are here tonight because all of us have a hobby. Every man or woman needs a hobby. We may need it desperately when we are old and when we have to step aside from the work of our lives. But even when we are young it is of great value as a relaxation. It loosens a man up; it keeps him out of ruts; it broadens his horizons. It does not make too much difference what the hobby is. After all you do not choose a hobby; it chooses you. It is like catching the measles; or, on a much higher plane, like finding a wife. You do not set out to do it. The lightning just strikes!

Hobbies do not have to be reasonable; more particularly, they do not have to be reasonable to the dull mass of outsiders. I have a collection of cartoons, poking fun at bird watchers; but I have never seen a cartoon stop anyone with the disease from wading in a swamp to find a prothonotary warbler.

But to come nearer to our subject. I suppose every bird student has his favorite bird or group of birds. My favorite bird is the one which in America we call the duck hawk, but which in English literature is known as the peregrine falcon. The peregrine is a magnificent bird—fast and wild and powerful. It is said to fly up to 90 miles an hour on a straightaway. No bird can ever hope to escape it by plain flying. No one knows how fast the duck hawk can go in a power dive. Bent in his "Life Histories of North American Birds of Prey" records an instance where an aviator, diving at 175 miles per hour, was passed by a plunging duck hawk as if his plane were standing still. It takes its food on the wing, clubbing down a flicker or a duck with clenched fists, sometimes catching the dead prey before it hits the ground. Sometimes it turns over in flight to pluck an unlucky dove out of the air above it.

I like hawks, indeed, I have a passion for them. I think that in this

group of birds you find one of the finest end products of evolutionary creation. But there are many people who do not like hawks. Many farmers hate them. Many sportsmen, though not now as many as formerly, think they are "vermin," and shoot them whenever they have a chance. Their idea is similar to the pioneer's idea of Indians; "The only good hawk is a dead hawk." The slaughter at points along Hawk Mountain, Pennsylvania, and at Cape May, New Jersey, is a case in point, though much of this is from the mere love of slaughter, for not only hawks, but flickers and doves and all kinds of small birds are shot in the general massacre. There is still an occasional county in Virginia that pays the bounty on hawks, in spite of all the evidence about its uselessness from any standpoint and about the frauds inevitably connected with the bounty system. You may remember the article in *Virginia Wildlife* some years back, "Mutiny on the Bounty," when some sportsmen were waking up to the absurdity of the bounty idea.

All scientific biologists, not to say all nature lovers, know that this hatred of hawks is foolish, that it is

*Continued on page 235*

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\* This is a condensed version of an address presented by the Reverend J. J. Murray before the annual meeting of the Virginia Society of Ornithology at Waplesburg, Virginia, May 3, 1957. It is reprinted here from the September-October 1957 issue of *The Raven*, official publication of the Virginia Society of Ornithology, with the permission of the editor, who is Dr. Murray.  
—The Editor

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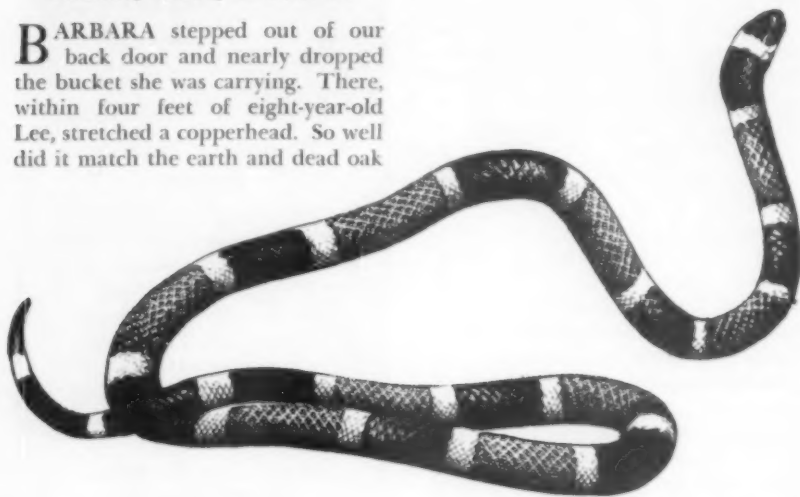
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# Roger Peterson's BIRD'S-EYE VIEW

## Snakes, Trees, and Birds

BARBARA stepped out of our back door and nearly dropped the bucket she was carrying. There, within four feet of eight-year-old Lee, stretched a copperhead. So well did it match the earth and dead oak



leaves by the doorstep, that Lee, busy with his insect collection, did not notice it. Barbara rushed in imploring me to "do something!" Quickly I grabbed up my Leica and the strobe lights and went forth to meet the situation.

The copperhead, measuring almost three feet, sat through two flash pictures, but when I tried gently with a broomstick to present its profile to the camera it objected and slithered under the porch. Later in the afternoon when the reptile emerged, a neighbor's boy caught it and removed it to a less public spot.

The rocky ridge on the back side of our property seems to be the local headquarters for copperheads. But a whole summer may go by without our seeing more than one or two, or even any, unless, of course, we deliberately hunt for them. Reptiles and amphibians must be searched for. Except for the frogs and toads they do not advertise themselves by singing as do most birds. I recall that in four months' safari in Africa last year I saw but four snakes. One, a black mamba, fled at my approach on the edge of a flamingo lake in Kenya. A month later, in the Congo, our land rover nearly ran over a large black cobra which scattered the natives who were walking along the road. A spitting cobra was seen at night in the Parc Albert and we saw one small snake that we could

not identify. We saw neither the dreaded Gaboon viper nor the well-publicized puff adder, although I did catch some *Charaxes* butterflies at a small but very dead puff adder that had been crushed by a car. When I asked John Williams, the Nairobi naturalist, whether he worried about snakes when he and his twin children pursued butterflies through the forest, he replied, "Life is too short for that."

In contradiction to this seeming scarcity, the young biologist of the Parc Albert told me that when he made a population study in the Garamba, using a platoon of natives which advanced on hands and knees,

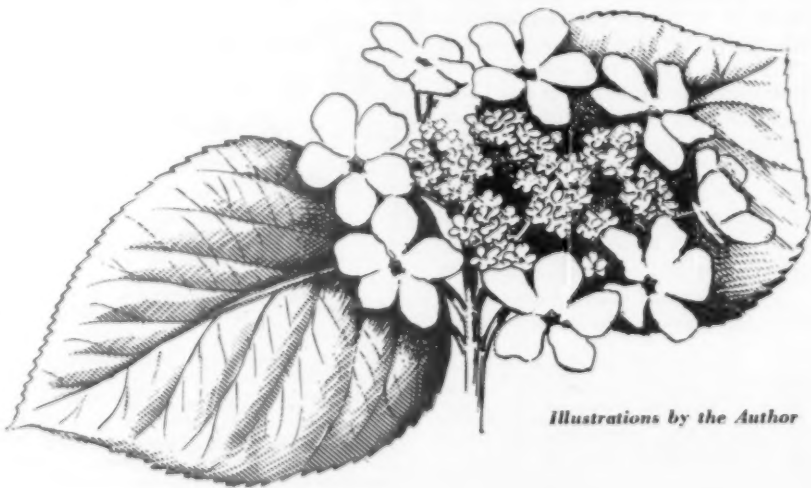
catching every living thing they encountered, he averaged 16 snakes on plots measuring 100 meters square. Particularly surprising was the great number of frogs they caught on these same plots, the food supply, no doubt, of many of the snakes.

Although I had access to the superb "Snakes of Uganda," by Pitman, I wished desperately for a field guide such as the new "Field Guide to the Reptiles and Amphibians of Eastern North America," by Roger and Isabelle Conant. This guide has been a long time in the making. During the years in which this book was being developed two new species of turtles were discovered in the south and a new tree frog, *Species*, that is, not obscure races of debatable taxonomic merit. It seems incredible that important new species can still be found in our country.

Mr. Conant, whose interest in the critters that hop and crawl was first kindled as a lad in a Boy Scout camp, has had a distinguished career as a professional herpetologist, first in the Toledo Zoological Park and then for more than 20 years as Curator of Reptiles at the Philadelphia Zoological Garden.

Isabelle Hunt Conant, the illustrator, who is Mrs. Roger Conant, accompanied her husband on many collecting expeditions to various parts of the United States expressly to obtain specimens with which to illustrate the book. The magnitude

*Continued on page 238*



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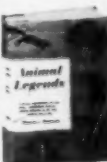


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View of Cranberry Swamp, or Tannersville Bog, photographed by the authors.

## Descent to a Boreal Swamp

By David and Sue Fables

THERE'S something magical about northern plants and animals—something so alluring that few naturalists can resist exploring a cold northern bog. When we on the Atlantic coastal plain think of a trip for boreal plants and animals, some of us may envision a northward trek, or one that would lead inland, ascending the higher peaks of the southern Appalachians. It is not necessary to climb the Appalachians, delightful as that may be, for we have some wonderfully rich and interesting bogs, with their northern plants and animals, close at hand. Some of these are in the lowlands of the Northeast. Let us see where and

why these bogs and their interesting plants and animals have developed, and what is happening to them.

South of the arctic tundra, tamarack, black spruce, and other northern evergreens clothe most of the Canadian provinces and extend into the northern parts of the states bordering Canada. South of this region, one finds increasing numbers of hardwood trees which, eventually, all but eliminate the evergreen trees. In the present age the climate of the more southern latitudes favors the deciduous, or hardwood, forest.

Where northern conifers are still abundant—south of the boreal forests of Canada, northern New England, and the Adirondacks—they usually

exist in two different kinds of areas. One is on well-drained uplands, and on the summits of numerous peaks in the southern Appalachians. Here, at altitudes above 2,500 feet, grow red spruce, *Picea rubens*, a hardy species gradually driven south by the glaciers, and one of many northern plants on these exposed mountain summits that persists because of a favorable climate. Many of these plants in the southern Appalachians exist today as isolated stands on the highest mountain elevations. Maurice Brooks and others have written of the birds breeding in this type of forest.\*

\* See "Appalachian Treasure," by Maurice Brooks, *Audubon Magazine*, March-April 1953 issue.



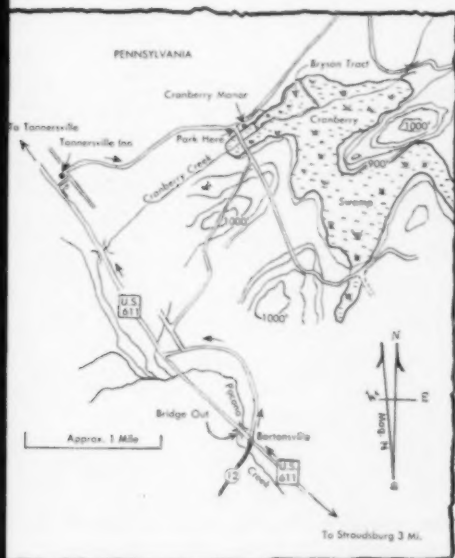
The second area containing boreal plants occurs farther north, in the middle Appalachians and in glaciated regions such as in western New York State, the Pocono Mountains of Pennsylvania, and the Kittatinny Mountains of New Jersey. Here one can reach the remnants of the boreal forests by a gentle descent from the surrounding hills. Here the hardwood forests look down upon those conifers of the northern muskegs—black spruce, *Picea mariana*, and tamarack, *Larix laricina*.

What geologic events preceded, and were in large measure responsible for the formation of these spruce swamps of the middle Appalachians? How far back from the lifeless conditions of the Pleistocene ice ages have the swamps come on the road of botanical succession? How many northern birds are found breeding in them? What will be the eventual fate of these relict coniferous stands? A brief glimpse at the geologic record will answer the first question; a visit to one of the swamps will answer the next two; and only time will answer the last question.

South of the northern Appalachians of New England, mountain ridges and intervening depressions were formed during a geological thrust from the southeast in the late Paleozoic era. The uplift of the Appalachians produced conditions unfavorable to the ancient plants of the region, and many species of club



Students from Union Junior College search for dwarf mistletoe and insectivorous plants in the bog. Photograph by the authors.



mosses, scouring rushes, and seed ferns became extinct. By Jurassic time, conifers were dominant, but they were overtaken in the subsequent Cretaceous Period by deciduous species of flowering plants which continue to dominate today in most temperate regions of the world.

Late in the Cenozoic Era (about one million years ago) Pleistocene ice masses moved slowly southward from the Arctic, obliterating the plants of the regions they covered and driving animals before them. These ice sheets covered most of the middle Appalachians of southern New York, northern New Jersey, and Pennsylvania. Their bulldozer action piled up much of the earth's mantle so that drainage from valley streams and depressions was impaired. As the earth's temperatures

rose once more, the glaciers began to melt and these waters released coarse till, which further complicated drainage by damming streams and creating glacial lakes in the mountain depressions. Eventual invasion of these lakes by plants produced bogs and swamps.

With the northward retreat of the last glacier, lichens advanced upon the exposed land which at this stage resembled an arctic tundra. Sphagnum slowly filled the ponds and lakes and converted them into "quaking" bogs (the muskegs of the Indian). Sedges and shrubby heaths invaded the moss, and when their establishment was assured, spruces, firs, and tamaracks followed them. The relict boreal swamps of the middle Appalachians today represent this stage of plant succession. The hard-



Dragon orchid, *Arethusa bulbosa*, photographed by Gottscho-Schleisner.



Grass pink, *Calopogon pulchellus*, photographed by Gottscho-Schleisner.

wood forest, a still later stage, has, on the richer, more elevated soil surrounding the mountain swamps, succeeded in establishing itself as the climatic dominant.

In the southern Appalachians, therefore, one *climbs* through hardwood forests to reach the isolated boreal conifers of the mountain tops; in the middle Appalachians one commonly *descends* through oaks, hickories, and maples to the isolated stands of tamarack and spruce that grow in the mountain depressions.

The Poconos and Kittatinnyes abound with tiny swamps, many of them difficult of access to a stranger who is not guided by a person familiar with the area.\* One such swamp readily reached by good roads, lies a few miles northwest of Stroudsburg, Monroe County, Pennsylvania. Designated as Cranberry Swamp on United States Army Engineers' Map, "Pocono Quadrangle," it is frequently referred to, by botanists and local residents alike, as Tannersville Bog.

Cranberry Swamp, or Tannersville Bog, can be reached via Route U.S. 611 by bearing east in Lower Tannersville at a sign marking the location of Tannersville Inn. The visitor travels the 1½ miles from Route 611 to the swamp through pleasant, alternating woodland patches and farmlands. From plowed fields come the penetrating alarm notes of nest-guarding killdeer; from the hedgerows, the measured songs of field sparrows and the bouncing lilt of indigo buntings; from the tops of sugar maples, the caroling of orioles. Here, at approximately 1,000 feet elevation above sea level, no typically boreal species of birds is found.

Turn off the macadam road at Cranberry Manor and park on the side road. After walking 200 yards farther along the macadam road, bear east, cross a pasture, descend the hillside, and prepare for wet walking (in normal seasons several inches of water cover the forest floor). Three concentric zones of vegetation occur in the swamp, which has a rather uniform elevation of 900 feet. Close to the sloping upland is a fringe of deciduous trees and shrubs; within this is a mixed

deciduous-coniferous forest; and in the center of the swamp, a coniferous tract reminiscent of the boreal muskegs.

One passes quickly through the narrow deciduous fringe of alders, blueberries, red maples, and sour gums, which is devoid of boreal plants and is the home of catbirds, red-eyed vireos, and yellowthroats. Ahead, the graceful, upswept limbs of white pines are visible, and soon hemlocks, rhododendrons, yellow birches, and red maples mingle with the pines. In the mixed forest portion of the swamp, in late May, the small yellow lady's-slipper, *Cypripedium parviflorum*, is in bloom at scattered points. It blooms two weeks or so later than the pink species, *Cypripedium acaule*, on the drier uplands. Goldthread, *Coptis groenlandica*, is abundant on the moss carpet which covers the extruding roots of maples and hemlocks. Luxurious stands of cinnamon and royal ferns and clumps of Bailey's sedge, *Carex baileyi*, afford places of concealment for nests of the veery, hermit thrush, and Canada warbler. From overhead in the hemlocks and yellow birches comes the high-pitched, wiry song of the Blackburnian warbler; the shorter, more pleasant phrases of the magnolia warbler; and the dreamy lay of the black-throated green. It is in the mixed forest that the northern birds begin to appear. Here the most arresting of the songs is the rapid reiteration of the northern waterthrush. All the species, though, are not summer residents. The ruffed grouse resides in the swamp throughout the year, feeding on berries in the bountiful seasons; on buds of birches and heaths in the season of want. At all times shelter is adequate, and from a rhododendron thicket the grouse's "drumming" carries far across the swamp, before the leafing out of the hardwood trees.

Soon the tall trees begin to thin and the visitor finds himself in the muskeg, that unsteady morass of moss and sedge, clad in a sub-arctic forest of delicate tamaracks and aromatic spruces. Highbush blueberry, *Vaccinium corymbosum*, makes the undergrowth dense, and the open areas disappear as sheep laurel, *Kalmia angustifolia*, bog laurel, *K. polifolia*, bog rosemary, *Andromeda glaucophylla*, and cassandra, *Cham-*

*Continued on page 231*

\* A compass, topographic map, and cloth trail markers are recommended equipment for this and similar exploratory field trips made in unfamiliar territory.



Purple-fringed orchis, *Habenaria psycodes*, against a background of interrupted ferns. Photograph by Gottscho-Schleisner.

# THE MOOSE

The largest of all the deer family is a magnificent animal—in battle or in repose.

Illustrations by Charles Liedl

By Helen Hoover

TRAVELERS in the forested areas of northern North America may occasionally see a bull moose standing by the roadside, his great head and antlers lifted as though to challenge their right to be there. And, if they look away for a moment, then look back, they may be startled that in spite of its size and awkward appearance, it has vanished into the brush without a sound.

The appearance of the bull moose is dominated by his antlers, which are flat and broad, spreading widely, with upcurved sweeping sections and many points, or tines, along the edges. They may be six feet wide; a record one taken in Alaska was 78 inches wide, had 34 points, and weighed 85 pounds, exclusive of the skull.

The bull moose's deep-chested body seems awkwardly balanced on his thin, knobby, four-and-a-half-foot-tall legs. His tail is very short and flat. His big head is carried forward and down from the height of his shoulder hump on a short neck. His muzzle is long and swollen, with an overhanging upper lip that may be moved back and forth. His ears are large and independently mobile. Hanging below his throat is a flap of skin and hair called the bell, which may be three feet long but is usually no longer than about 12 to 18 inches. His furry coat is an inch in depth, is a dark grayish brown to almost black, but lighter-colored on his muzzle and legs.

The rutting season of the moose is from September until November,

but may continue into December if the weather remains unusually warm. During this time the bull is definitely to be avoided, as he will charge just about anything of size that he sees, perhaps under the impression that it may be a rival, perhaps out of plain bad temper. Unlike the elk and caribou, he does not collect a harem but takes only one mate—at a time, that is—and then only for a week or ten days,

## Range and Size of Moose

Moose range throughout the forested regions of Alaska and Canada south of the tree limit, with the exception of most of the Pacific coastal regions. In the United States, it inhabits the Rockies as far south as central Wyoming and Idaho, northern Maine, the extreme northern parts of Vermont, New Hampshire, New York, and Upper Michigan, and the eastern Canadian-border regions of Minnesota. The species, *Alces americanus*, is widespread in these regions; *Alces gigas* lives in Alaska.

The moose is the largest of the deer family (Cervidae) and the bull in Alaska may attain a height of eight feet at the shoulder hump and weigh almost a ton. A height of seven feet and a weight of 1,500 pounds is not uncommon throughout the entire range. The average length of the paired, curved, teardrop marks of its cloven hoof is about seven inches, but I have measured tracks which were nine inches long, with a spacing of six feet between the hoof prints, where a moose had trotted along the muddy edge of the Minnesota woods road which leads to my home.—The Author

after which he goes off to seek another.

His mating bellow sounds something like a diesel horn and, I believe, may be heard as far. The first time we heard it, my husband and I almost dropped our tea cups at the blast of sound which seemed to originate just outside the cabin door. At that time, we had not lived long in the woods and had not the slightest idea what it was. After the lapse of a reasonable interval of silence we investigated. About 500 feet away, crossing the road and leading into the thick brush of the hills to the south, we found moose tracks. From beyond the first ridge we heard a confusion of grunts and bellows, which was too alluring to ignore.

When we had climbed to the top of the ridge we looked down into a small valley, covered with grass, brush, and clumps of young aspen and birch. Two bull moose were fighting—panting, grunting, and pushing furiously antler to antler. Suddenly one was shoved backward. With a scream of rage he landed heavily on his rump. Before the other could take advantage of this fall and get around to the side where he might strike a damaging blow to the ribs or belly, he was up and the two again squared away. With lowered heads, they appraised each other like boxers or wrestlers seeking an opening. Suddenly the great antlers clashed together and the fight went on, accompanied by terrible roars and an ever-present whine or humming sound. (A trap-

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“Two bull moose were fighting — panting, grunting, and pushing furiously.”→







"The calf is a skinny, comical-looking fellow about 32 inches tall."

per has since told me of a similar contest he had witnessed, where the humming was so loud that he at first had the odd sensation that hornets were buzzing around his head.) The ground was torn up, trees were snapped off, and the brush was flattened over a large area, for the battle arena moved to a new location when one or the other ran for a hundred yards or so, seemingly to catch his breath before renewing the struggle.

The bulls were well-matched in size, with fine antlers, behind which their bristling neck hair added to their angry appearance. We did not learn the outcome of the battle because the wind suddenly changed, and they scented us. They stopped fighting and hurried out of sight at their shambling trot that seems so awkward but covers ground at an amazing rate because of their long strides. Probably one contestant gave up and ran away. Rarely one moose may kill the other or they may lock antlers and perish together. But we could be sure that somewhere nearby a cow was eagerly awaiting the outcome of the fight between the rivals for her affections.

The cow moose is a three-quarter-size edition of the bull, without antlers and with a smaller, less-bearded bell. Her calf is a still smaller replica of herself, with the bell but without the shoulder hump and the long upper lip. Its legs are, relatively, longer and thinner and its coat is

light colored with a dark muzzle and marks over the eyes.

The handsome antlers, like those of all the deer family, are shed in early spring and reappear as nobs covered with soft, fuzzy skin in May. All summer as they grow to full size they are covered by this "velvet." In late summer the covering dries and is rubbed off against a tree trunk, to expose the white of the bone of which the antlers are composed. Later they darken from exposure and remain unchanged until the resorption of the bone at their base causes them to drop off at the end of winter.

With the young bull moose, the antlers increase from spikes in a yearling to a maximum size with many edging tines in a mature bull of about 12 years, at which time the bell also reaches its greatest development. As the animal ages, the antlers grow smaller and have fewer tines with each year and the bell diminishes until it is a mere flap of skin in a very old bull.

In May or June the cow seeks a secluded spot—a small island is a favorite—and there bears her calf or calves. Twins are quite common and triplets occur rarely. They are skinny and comical-looking little fellows, about 32 inches tall. They have attenuated, shaky legs, and they behave as foolishly as they look. They stay very close to the mother and are still with her when she mates again in the fall. At the next

spring, the calf is about five feet tall, and when the birth of his successor is imminent, the cow drives the yearling away to learn to look after himself.

Moose live only in densely-forested areas, usually near shallow lakes or swamps. During the winter they may gather in small bands, made up of a bull or two, several cows, and their accompanying calves. These bands may winter in thick swamps, browsing over nearby hills. When the snow becomes very deep and their long legs cannot carry them easily through it, they make "yards" with trails which are kept open by walking in the same tracks. During the summer, the cows with calves, the lone females, and the bulls make their way in solitary dignity through the woods, grazing and chewing their cuds.

As the moose have no upper incisors or canine teeth, they must scoop their food upward instead of biting it off. They feed on a wide variety of plants and are helped by their height and extraordinary reach.

They graze with no difficulty on shrubs such as alder and the various berries, jewelweed, and similar tall plants, and ferns. Their long legs, short necks, and deep chests prevent them from reaching the ground to feed, so, if they have a taste for moss or low-growing lichens, they kneel and move slowly ahead, neatly mowing the greenery as they go. The leaves of aspen, birch, maple, cherry, and other deciduous trees are stripped easily to a height of nine or ten feet and, if the moose wishes more, he may nudge the branches down with his muzzle and thus eat leaves that grow 20 feet up. If the tree is small—perhaps up to three inches in diameter—he may simply straddle it with his front legs and break it down, to feast in comfort. He is fond of the upper bark of the aspen and may break these small trees in the winter and spring, or hunt for windfalls. His winter food is mainly fir and the buds and twigs of the trees and shrubs which he eats in the warmer months. And he is so fond of ground juniper, a type of yew often very appropriately called "shintangle," that he may graze it to virtual extermination.

For the same reason, water lilies and other succulent water-growing

plants may disappear in an area where moose are plentiful. The animal prefers to wade into water three or four feet deep, duck his head under the surface, and come up with a whole plant. He is said to be able to keep his head submerged as long as two minutes. The only cow moose that ever looked really feminine to me was knee deep in a pond, munching on a water lily, her head smartly bedecked with trailing green.

The moose enters the water in spring to escape from the torture of black fly bites and may sometimes wallow in mud to further protect himself. But he enjoys licking mud all through the year and may even dig through snow and ice to reach it. He has no fear of the deep ooze of swamps and will plow steadily through the muck, with occasional pauses to rest. He is also a strong swimmer and does not hesitate to cross miles of water, even in bitter cold. A cow may take her calf with her on a summer swim and, if the little fellow tires, he may rest his head on her body or throw a

leg over her neck and she will tow his weight with ease.

On the whole, the moose does not make unprovoked attacks on people. A cow may defend her calf but is more likely to withdraw with it if startled. The bull, except during the rut, seems to be more curious than alarmed or angry if approached within a reasonable distance. I stepped out of the cabin with a lantern on a winter night and was paralyzed with fear, as I stared up at the seemingly mammoth height of a bull, standing only ten feet from me. He looked at me a moment after I had switched off the light, then turned and trotted away to the road without haste.

Even if mildly annoyed, a bull moose may not retaliate too severely, as in the case of two young men in a canoe, who came on a bull that was placidly eating duckweed in a channel they wished to travel. Rather than wait until he had had his fill they paddled forward and nudged him about the legs. He lowered his head and shoved the canoe over. When the terrified *voyageurs* had

scrambled to shore, they found their only casualty to be a hole which had been snagged in the canoe by a rock. The moose was still calmly eating duckweed in the middle of the channel.

If seriously bothered, bulls may chase people into trees and keep them there for hours. Sometimes they will patrol the door of a cabin so that the occupant is a prisoner. To my knowledge, things of this sort have happened in times other than the rutting season, but I know of no instance where the moose could not be considered justified in returning someone's ill-mannered behavior in a way that, considering the animal's strength and size, would seem to be very mild indeed.

The same strength and size limit his enemies to the wolf, the bear, and man, with an occasional attack by a mountain lion. It is pleasant to conclude that even though there are numerous timber wolves in northern Minnesota, the moose, under very strict game-law protection, seems to be showing a definite increase there.

—THE END

**"When feeding on aquatic plants, moose prefer to wade in water three or four feet deep and duck their heads below the surface."**





# The Rare Bachman's Warbler Again

By Alexander Sprunt, Jr.

SEVERAL years ago, in the July-August 1954 issue of *Audubon Magazine*, an article appeared that I wrote called, "Unpredictable Bachman's Warbler." It was illustrated by a black and white drawing by the artist John Henry Dick, who illustrated the recent book, "The Warblers of America." The Bachman's warbler is still entitled to its distinction of "America's rarest warbler" but, even more than that, it continues to deserve the adjective "unpredictable." At no time in its history has this word seemed more appropriate than in its occurrence in the spring of 1958, not many miles from the spot of its original discovery in South Carolina in 1833.

On April 26, 1958, Mr. and Mrs. Frederick Horlbeck of Charleston, S. C., heard a warbler song which, when followed up, proved to be that of a Bachman's warbler. It was heard in a most unlikely locality, not in a deep swamp, belaced with vines, knee-deep in water, populated by ticks and water moccasins, not in a spot where boots or long-distance travel were necessary. It was seen five miles from Charleston, South Carolina, a quarter-mile from a heavily traveled highway, and on the very edge of a thriving suburban development. It was in high, dry pineland, with an admixture of myrtle, scrub oak, and sweet gum. The pines were largely long-leaf, *Pinus palustris*.

There, within an area varying little more than 100 yards across, a male Bachman's warbler sang almost constantly throughout every day, nine times every minute, from April 26 to May 25, interrupted only by occasional descents into the undergrowth to feed. Frequently the warbler chose a completely exposed perch on the end of a pine branch, or projecting stub. Needless to say, the bird was seen and watched by many observers!

Interesting and exciting as all this was, the climax of this occurrence was the fact that this bird was *photographed for the first time in history*, both in still pictures and in motion pictures in color. John

Henry Dick, of Dixie Plantation, Meggett, S. C., took the still photographs with a 1000 millimeter (40-inch) lens attached to a Leica camera. He notified Mr. H. Philip Staats, a winter resident of Charleston, of the bird's presence and Mr. Staats

successfully took excellent movies of it with a Bolex camera. Readers of *Audubon Magazine* will recall John Henry Dick as the artist whose work appears in "South Carolina Birdlife," "Florida Birdlife," and "The Warblers of America."—THE END

The first photograph ever taken of a Bachman's warbler. From a Kodachrome by John Henry Dick.



## Spider's Web Leads to An Ornithological Discovery

Saturday, April 26, 1958, my husband and I first saw and heard a male Bachman's warbler in St. Andrew's Parish, Charleston, South Carolina. We watched it for more than an hour, in a habitat

quite different from the deep swamps of the Southeast where it usually nests. Since that day we heard that it has been photographed by several people, and its song recorded.



As we turned into the first dirt road near the new Ashley River bridge, about five miles out of Charleston, we were startled to see a small bird fluttering in mid-air over the road, with its foot caught by a thread of strong spider-web, which stretched from a pine-tree on one side of the road down to a myrtle bush about 20 feet high on the other. As the bird jerked to free itself, the elasticity of the spider thread would pull it back. Mr. Horlbeck stopped the car abruptly, meaning to get out and free the struggling bird, but this only added to its fright. With a sudden burst of strength, it pulled away. At no time was the bird quiet enough or in light good enough for us to identify it.

We searched in the shrubbery for the bird and web, but were unable to find either. The incident was over in much less time than it takes to recount it. I would have liked to have been able to prove that the web was that of the Wilder's Carolina silk spider, but that is only surmise.

For a while, hooded warblers, vireos, cuckoos, and a chat engaged our attention, then Mr Horlbeck said "What is that? Sounds like half of a parula's song, or was it a faint pine warbler's song unfinished? It was almost an insect sound!" Then we saw the small bird high in a tall pine tree, on a broken-off dead branch. It sang incessantly, and sometimes it changed perches. Finally it dropped down to the fresh green shrubbery near the edge of the road by us, and at last we saw its colors and markings. It was hard to believe—yellow breast, black cap on top of its head, and black bib! It was a Bachman's warbler, but what was this bird doing in a dry pineland? The answer, we felt, must be that it was merely passing through on migration.

That night we telephoned Mr. and Mrs. Robert H. Coleman to ask them to check on the bird the next day if possible. Mr. Coleman is President of the Charleston Museum and both Mr. and Mrs. Coleman (qualified "bird people") live within a mile of the place where the bird had been seen. They confirmed the identification after watching the bird through binoculars and a Balscope. Many people have seen and heard the bird since then to their great delight. As of May 23 it was still there!

The contrast of the pinelands to its usual swamp home was amazing; but perhaps the remarkable part of the story is that we would never have stopped so closely to the highway had not the little unknown bird caught its foot in the line of a strong spider web.

ELIZABETH MILES HORLBECK

Charleston, S. C.

## HOW IT GOT ITS NAME

squirrel

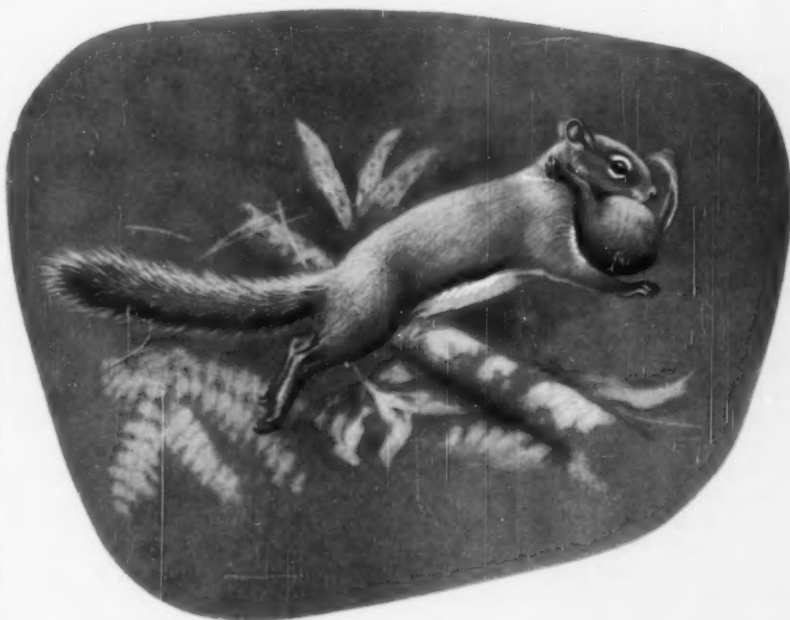


Illustration by Walter Ferguson

By Webb B. Garrison

**N**ATURALISTS of pre-Christian eras were well acquainted with a little rodent that spends much of its time leaping in trees. They didn't consider that trait to be its most distinctive one, however. In regions where mid-day heat was oppressive for much of the year, men were fascinated that the nut-eater carried a built-in parasol. From *skia* (shade) plus *ouva* (tail), the little animal with the big tail was known to Greeks as the *skiuros*.

Its name passed through Latin and entered English prior to the 14th century. Early writers used at

least 15 different spellings, for the old word was ill-adapted to clumsy northern tongues. Eventually it was standardized as *squirrel*. Captain John Smith was incredulous when he saw the large size of Virginia squirrels. Writing in 1624, he declared that the largest were about the size of a small English rabbit.

Firmly established in many temperate regions, the squirrel is no longer noted for its equipment with which it was thought to shade itself from the sun. But the ancient title clings to it so firmly that in most parts of the world its name still has the meaning of "shadytail."

—THE END

# Ring

The story of a raccoon

that gave a boy the will to walk again

By George S. Lookabaugh

A FARMER friend of mine had unknowingly cut down a raccoon's home tree. The mother and three of her young were killed when the den tree fell. A fourth youngster miraculously survived, and when the baby raccoon and I first met, I was in a wheel chair. I was 17 years old, and an accident had paralyzed me from the waist down.

I accepted the challenge to rear this bit of wildlife partly to help my farmer friend relieve his guilty conscience for cutting down the den tree, and because I desperately needed a diversion. I named the small creature "Ring" because of the dark circles around his little rope-like tail. He was so small he would fit nicely in my shirt pocket. The young of most animals can be termed cute, but only Ring's mother would have thought that of him. His baby fur was coarse and his peaked face gave him a cadaverous appearance.

For a few weeks Ring was without personality. He did little but sleep, and he squalled when he was hungry. His formula, which he sucked through the nipple of a doll bottle, consisted of one-third evaporated milk and two-thirds water. Ring's home was a wooden packing crate bedded with straw. I kept it on the floor beside my chair. His first ventures outside of his box were to my lap, where he climbed by way of a wheel of my chair. I would play with him by the hour, but if another person walked into the room, or if he heard an unusual sound, he dropped from my lap, crawled into his box, and tried to hide under the straw.

It wasn't long before Ring became accustomed to the sounds of civilization and to people. He seemed to prefer me, but anyone could handle him if they picked him

up in their arms. He hated being picked up by the scruff of his neck.

Before Ring became too big to sleep in the house overnight, I had his box placed by my bed. Many were the nights I was half-awakened by his noisy explorations of my room. He climbed anything that offered him a footing and nothing in my room escaped his scrutiny. These nightly romps were not brought on by hunger, but by his prevailing curiosity and his nocturnal habits which are hereditary. As he grew older he gradually lost his urge to explore at night, but he never lost his curiosity.

Strangely, Ring never bothered me while I slept. When I awakened in the morning I would find him fast asleep in his box. I would shake the box and he would awaken immediately. Then we would have a tussle. I would lift him to my bed and he would take the bed clothes in his mouth and shake them fiercely, all the while making growling sounds like a puppy. Suddenly he would stop this, throw his head up, and listen for a moment. Then he would abruptly face me, crouch on all fours, flatten his ears against his head, and start backing slowly toward the foot of the bed. While he did this he growled as savagely as he could, and rolled his eyes. The clownish act never failed to make me laugh. After Ring had backed to the foot of the bed, he would bound toward me until he collided with the palm of my outstretched hand. I have played with pups and found that they put pressure into their playful bites, but Ring never did.

"I can always tell when you are awake," my mother often said as she came to help me up in the mornings, "because I can hear you and this nuisance whooping it up. And just look at this bed!" She would

smile and give Ring's ear a playful pinch.

I had heard the legend that raccoons always washed their food before eating it. After observing Ring I concluded that raccoons put their food in water to soften it, rather than to clean it. Because he did not have water in which to wash a delicacy did not stop Ring from eating it, but he would often refuse to eat bread unless he could soak it first.

Ring would eat practically anything that I would, and a lot of things that I wouldn't. He especially liked bologna, hamburgers, and ice cream cones, and insects that came within reach of his ever-searching front paws. It was comical to see Ring immerse his first ice cream cone in his water pan. The ice cream dissolved, and all that the puzzled young animal had left was a water soaked cone. It didn't take him long to unravel the mystery because a very few "ice cream cones later," he had learned to lick the ice cream down to the level of the top of the cone. Then, using a front paw like a spoon, he scooped up the ice cream from inside. After the ice cream had disappeared, the cone got the usual water treatment before he ate it.

One day I put a piece of bologna in a deep, narrow-necked flower vase, and put the vase on the floor to see if Ring could get the meat inside. He stretched first one foreleg into it, then the other, as far as he could. Failing to reach the meat, he rolled the vase across the floor, then reached inside it again. He never got the meat out of the vase, but neither did he waste much time on what, to him, was an impossibility. After about four minutes of solid effort he left the vase and did not return to it even though I left it on the floor for several hours.

*Continued on page 246*



"Ring" in the arms of his farmer friend Lester Taylor. Photograph by the author.



"The familiar spirit of grassy rivers and brackish meadows." Photograph by G. Ronald Austing.

# THE WILSON'S SNIPE\*

**Now called the common snipe, the Wilson's snipe is one of the most appealing of all American marsh birds.**

**By Henry Marion Hall**

**W**HEN bottom lands brighten beneath April showers, along brooks in which the alewives throng up from the sea, Wilson's snipe blow in on the south wind and pitch into their green meadow world. I have had occasional glimpses of them, flickering through the gloom, or

dropping among the cattails in sweet water marshes. Sometimes I see one far up in the ruddy evening sky, zig-zagging across the darkening water. Even when bound for some definite objective, this bird finds it impossible to travel in a straight line.

Snipe will find a marshy pocket on a farm even if it is not half-an-acre in extent. Such a miniature marsh oozes from the top of a hill near Califon, New Jersey, in the center of a rocky pasture much frequented by killdeer plover. A single

\* According to the A.O.U. Check-List of North American Birds (1957), *Capella gallinago delicata*, is now called the common snipe. Some other names for it are American snipe, meadow snipe, marsh snipe, bog snipe, gutter snipe, jack snipe, alewife-bird, and shad spirit.—The Editor



snipe will often alight there during migrations, almost as if it had scented the place while drifting past among the evening clouds.

When one drops in at Califon, a hundred may revisit some larger fen at no great distance, for they often arrive in a cloud. As the woodcock is the genius of bosky crofts and upland alder runs, so the snipe is the familiar spirit of grassy rivers, fresh water morasses, and brackish meadows. It haunts more acres of such terrain than any other bird, ranging throughout North America, Central America, and South America to southern Brazil. It is accidental in Greenland, Bermuda, Hawaii, and Great Britain.

Old-time sportsmen accustomed to hearing its sharply uttered "Scape! Scape!" as it flushes before their dogs, seldom thought of this bird as a minstrel of the night.

Such, in a humble way, it certainly is. Its winnowing notes, strangely elusive and ephemeral, have a spirit-like remoteness when they float down from the gloaming above some verdant river-bottom. Sometimes one glimpses the bird through the dusk in the spring. It circles at such heights that one frequently hears only the ventriloquial sounds, now here, now there. The observer must take the bird itself for granted.

These sounds are not vocal. The snipe rises at a steep angle and describes an immense ellipse. Then, slanting downward and side-slipping, the outer quills of its wings and tail produce the melody. Similarly the "bleat" of the European snipe is thought to be made by its tail feathers.

Whatever the instrument producing the sounds, they seem to be attuned to the ears of some female, lurking in the grassy wilderness below. They recall the less musical but more familiar lay of the American woodcock. These two upland shorebirds have many points in common: long, sensitive bills for probing in the fens, mottled plumage on back and shoulders matching typical surroundings, and a decided liking for the dusk. Both species migrate by night.

The mystery of snipe migration, here today, but gone tomorrow, also reminds us of woodcock ways. Both species revisit the same favored spots year after year, and no other species

of game was more shamefully overgunned in the days of its greatest abundance. To cite a familiar example, Mr. James J. Pringle, gunning snipe near Bayou Teche, southwestern Louisiana, killed 69,087 in 20 years. In November, 1874, he killed 1,445 snipe in six shooting days.\*

No other sportsman equalled Pringle's score, but many tried to do so, and when the birds were at length removed from the list of legal game, they were in danger of extermination. Of late years Wilson's snipe has been gaining slightly in numbers and so it has been made legal game again—a measure deplored by all good sportsmen.

Snipe are among the few shorebirds whose nests may be seen by observers in our middle latitudes. The nest is a wisp of grass whirled into a circle in a marshy meadow, sometimes on a patch of floating-island, or knitted into a sedgy tuft at a slight elevation beside some creek or run. April 29 to May 26

\* See "Game Birds, Wild-Fowl and Shore Birds," by Edward Howe Forbush, p. 247.

is the nesting period in New England and the Middle Atlantic States.

It builds its nest early, and spring peepers seem to hail its construction with shrill applause. But before the chicks pip the shell the peepers' cries will have yielded to the "Trrrrrrump! Trrrrrrump!" of bullfrogs. While it is building, the male snipe struts before his mate, his head thrown back like a miniature turkey cock, his wings trailing, and his tail spread. Now and then the snipe peeps "Look at this!", spiralling up a little way to display his charms in flight. But he soon pitches down again, with twittering notes to his love.

He is far from silent on the ground. Sometimes a marsh will become noisy with unseen rails, all cackling at once. A big flight of Wilson's snipe sound off in the same manner, but in a higher, shriller key. One moment the racket is almost ear-splitting, but the next is as silent as death.

One occasionally sights a snipe nest raised some inches above the floor of the bog. The eggs, very

"One occasionally finds a nest raised above the floor of the bog." Photograph by Gaston Le Page.



large for the size of the bird, are pear-shaped, whitish or gray, with heavy blotches of brown, umber, or black on the larger ends. Lustreless when placed beside woodcock eggs, they bear patterns not readily noticed in the grass.

The female snipe broods her eggs to the strains of an all-night, marshland orchestra. The solitary bittern sounds the loud bassoon, while the bubble-throats of a thousand treefrogs furnish the music of fifes and piccolos. If the nest is in the deep South the boom of distant bull alligators sustains the bass.

When at length the snipe chicks pip the shell and trip forth into the fen, they will find limitless insect food on which to fatten. Like the young of all other Limicolae they are precocious, and quickly learn to feed themselves. You will never see a mother snipe shoving worms down their throats as parent robins must do for their young. Like woodcock, snipe probe for worms, but also consume mosquitoes and their larvae, Mayflies, damselflies, cutworms, grasshoppers, wireworms, water beetles, and click beetles. They also eat the seeds of various weeds and water plants in the meadows. They can swim, dive, or wade equally well,

and have been known to alight in brush and low trees. No other member of their order is more versatile.

Although Wilson's snipe and woodcock wear somewhat similar protective patterns on their backs, their under parts are markedly different. The grayer, speckled plumage of the smaller Wilson's snipe, and its whitish belly contrast sharply with the russet breast of the woodcock. In feeding the snipe jabs its long bill vertically and repeatedly, whereas the woodcock holds its mandibles deep in the mud.

Snipe have always been more numerous with us in the spring than in the fall. The reason is that on the southward trek large numbers fly out to sea and escape notice unless driven inland by severe gales. In such cases they suddenly throng the shores of Cape Cod, Monomoy, Block Island, Nantucket, Martha's Vineyard, and far Montauk. They are now and always have been eccentric and unpredictable.

Having taken recent notes on snipe marshes in Maine, Massachusetts, Rhode Island, New York, Long Island, New Jersey, Georgia, and Florida—all places where snipe were abundant in my youth—I have failed

to find any such increase of snipe as would justify putting these birds back on the game list. Here and there, perhaps, there may be some improvement. In certain marshy pockets northwest of St. Augustine, Florida, snipe are gaining slightly, and the same thing is true of the estuaries of the Wakulla and St. Marks rivers 15 miles south of Tallahassee. But 89,000 acres of that region are included in the St. Marks Federal Wildlife Sanctuary where birds are rigidly protected. The average Florida guide has absolutely forgotten the Wilson's snipe. A gunner with whom I have gone after turkeys almost stepped on a brace of snipe last time we were a-field, and asked, "What are them things—killdeer?" I deplore the fact that snipe are once more legal game. Any such gunning pressure as the old-timers used to exert might exterminate the species.

One never recalls his semi-occasional experiences with the elusive snipe without inhaling again the aroma of autumn marshland, or admiring its brown tapestry outlined by the carmine border of swamp maples, or hearing the odd, staccato cries with which the birds lifted free of the grass, and darted erratically away.

—THE END

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## ★ ★ ★ NATURE IN THE NEWS ★ ★ ★

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### Long Island Ospreys Abandoning Nests On Meadows to Invading Gulls

*Reprinted from  
The New York Times, July 15, 1958 issue.*

A leg-banding party in search of the osprey, or fish hawk, discovered over the week-end that most of the huge nests on the extensive meadowlands at the northern end of this island had been abandoned.

Because they are losing a bitter war they have long been fighting against hordes of raucous herring gulls, the fish hawks have given up nesting areas in annual use for more than 30 years to move to other parts of the island.

Gardiner's Island, at the eastern end of Long Island, was at one time the nesting home of 300 ospreys—the biggest recorded colony in the world. However, the banding party found about 15,000

gulls where once there were none.

Leroy Wilcox, a duck farmer in Speonk, L. I., and an authority on Long Island birdlife, was leader of the party. He started making annual trips to the Gardiner's Island meadowlands and keeping records on the osprey in 1928.

"There is no question but what most ospreys that have used these nests are retreating to the tall-timbered areas of the island," Mr. Wilcox said.

He pointed to an osprey, a fish clutched in its talons, weaving through an almost solid umbrella of flying gulls. Eight gulls immediately peeled away from circling to dive and peck at the osprey all the way to its nest.

He explained that the gulls had

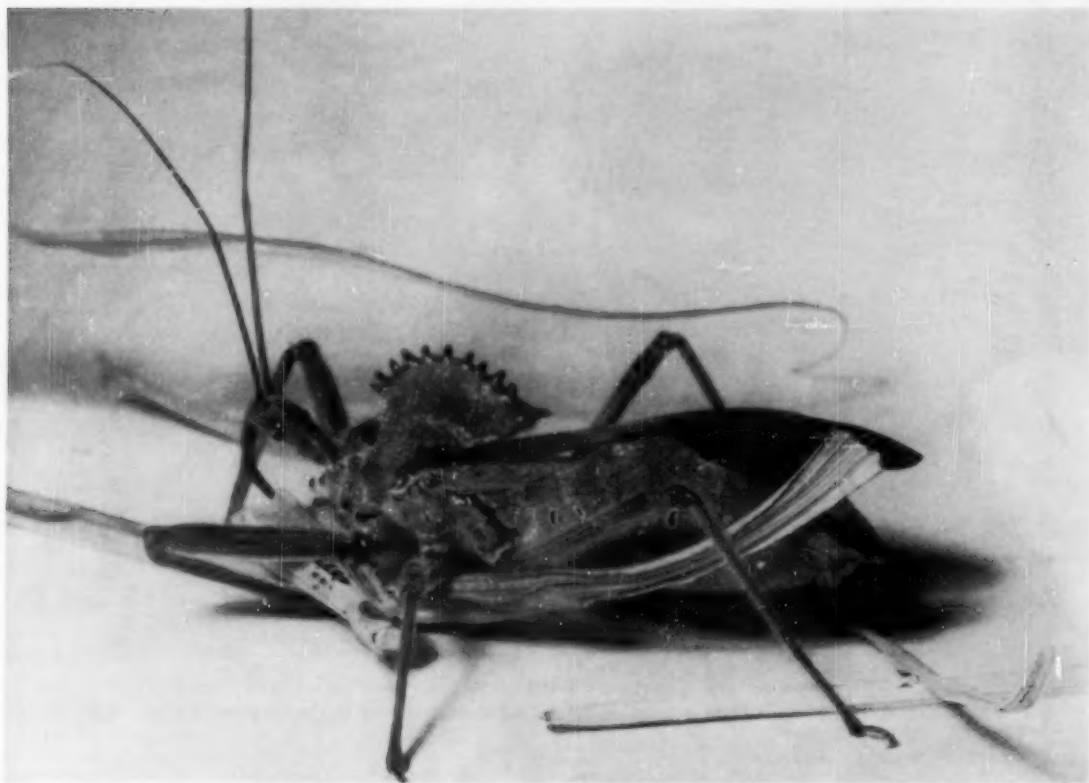
started moving into eastern Long Island from the New England coast about 15 years ago.

The ospreys' nests on the meadowlands are five feet in diameter and some of them have been built up with layers of sticks and debris to a height of five or six feet.

In inspecting 39 nests, Mr. Wilcox found that 26 had not been used at all this year. Using light metal bands with serial numbers assigned by the United States Fish and Wildlife Service, he banded 19 young ospreys in 13 nests.

Mr. Wilcox's record books showed that in 1941 he banded 80 young in 43 nests on the meadowland. There were no gulls on the island at that time he explained.

# THE CRESTED ASSASSIN



The wheel bug, *Arilus cristatus*, photographed by the author.

By John R. Clawson

SOME members of the insect kingdom are more or less nondescript with one insect closely resembling many another. This is not true of the wheel bug, *Arilus cristatus*, for she has a striking feature that sets her apart from any other. This is the semi-circular, crown-like, crest that sets atop her prothorax. That odd "cog-wheel" makes her appearance distinct from all other insects. The wheel bug is one of the assassins of the family Reduviidae. Her favorite habitat is among flowers, where she awaits the appearance of unwary prey. For the most part, she is a predator only on insects—although at times she attacks warm-blooded animals—and if disturbed, she will stab her sharp beak into man. Her attack is often painful, (which also helps set her apart from

the mostly innocuous insects) and she is best avoided when possible.

Two large eyes bulge from a long slim head and help add to her strangely grotesque appearance. Two ocelli are generally placed behind the eyes, and in front of them is a sharp beak riding in a furrow. She can make sounds by rubbing the beak against the delicate striations.

Her legs are strong, and the forelegs, although not especially adapted for grasping, are surprisingly powerful.

The wheel bug in the photograph had just clutched a grasshopper. With the grasshopper's long back leg in her grip, she resisted every attempt the grasshopper made to leap away. In a last desperate round of gyrations, the hapless hopper tore his body from the one leg in her strong grip while he made his escape on the other five. Despite all efforts

by the photographer to remove this leg from her grip, lady wheel bug clung to both the leg, and also to a long stem of grass she was holding. This attests to the power in those two front legs.

Eggs of the wheel bug are laid in clusters on leaves—like other plant bugs in the order Hemiptera. The eggs, standing upright, look like tiny milk bottles grouped in a little round mass. Hatching young ones are often blood red, with black marks, and closely resemble the adults. These nymphs, too, prey on other insects, which they stab with a beak oozing a poisonous, paralyzing fluid.

The wheel bug is considered highly useful to mankind. She helps to control many leaf-eating caterpillars, and the adults of the Japanese beetle. A dangerous lady is she, but a very useful one. —THE END



Photograph of pintails from a painting by John James Audubon in the Elephant Folio.

## THE ELEPHANT HUNTER\*

**A retired business man has undertaken the exciting task of tracing all the existing Elephant Folio editions of Audubon's "Birds of America."**

**By Waldemar H. Fries**

**T**HIS rather misleading title was bestowed upon me by my friend, Edward Shenton, the artist who did the delightful illustrations for "A Gathering of the Birds," by Donald Culross Peattie. I had talked with him so enthusiastically about my self-appointed task of making a census of the existing copies of the Elephant Folio of "The Birds of America," by John J. Audubon, together with obtaining historical data in the hope of tracing each set to an original subscriber, that with some ceremony he dubbed me "The Elephant

Hunter." He has so called me ever since.

During the summer of 1957, I visited Audubon House in New York City to look at the set of the Elephant Folio edition which had been presented to the National Audubon Society by George Hewitt Myers of Washington, D. C. This, incidentally, was the sixty-second set I had seen and examined in the eastern United States and Canada during the past year.

In the beginning, however, it would be well for me to tell how it all started. Many years ago, I had seen my first set of the Elephant Folio, then on exhibition at the Free Library of Philadelphia. It was the

property of Cornelius D. Ehret, a Philadelphia patent attorney. Since he and I both were Cornell graduates, I expressed the hope to him that some day his set might be included among the ornithological treasures at that university. However, Mr. Ehret very frankly said that he had purchased the set as an investment. In fact, shortly before his death it was sold at a reputed price of \$30,000 to J. Lucher Stark of Orange, Texas, where it is still housed.

It was not until the spring of 1956 that the "elephant hunt" actually began. I had retired from business and was living in Little Compton, Rhode Island. I had been a mem-

\*Mr. Fries used this article as a basis for his talk, with this title, before the Annual Convention of the National Audubon Society on Saturday, November 10, 1957.—The Editor



ber of the Massachusetts Audubon Society for some time, and now found it possible to participate in the spring campouts included in the program of that society. The first one of these which I attended was held in May at the Arcadia Wildlife Sanctuary at Easthampton, Massachusetts. En route to this campout, I visited Amherst College. Here, a set of the folio had been presented to the library by Herbert Pratt, class of 1895, which he had purchased in England. A year later, I was to re-examine this set and make the remarkable discovery that the first volume contains an engraved list of subscribers, similar to the one which Audubon published in his prospectus. A copy of this prospectus is in the files of the American Philosophical Society in Philadelphia. While the prospectus is not dated, it was received by the society on April 17, 1829. Furthermore, there is in existence a letter from Audubon to his engraver, Havell, instructing him to include this list of subscribers in this particular set, the original subscriber having been George H. Read, Esquire, a banker of Carlisle, England.

In June of that same spring of 1956, there was another campout,

this time at the Pleasant Valley Sanctuary at Lenox, Massachusetts. I had learned that the set which Havell had brought with him to America was at the Trinity College Library in Hartford, Connecticut. So on my way to the campout, I visited this library and saw what is probably the most beautifully executed of all the copies of the folio, every plate having been carefully selected by the engraver himself.

It was not, however, until November of that year, while visiting Harvard University, that I determined definitely to make a census of the extant copies of the Elephant Folio, always striving to obtain as complete a history of each set as might lead me to an original subscriber. Harvard itself has, at the present time, two complete sets of the 435 plates, and an incomplete set of 200 plates. There had been another set; but this, being in poor condition, had been sold some years ago. Even before my inspection of the Harvard copies, I had seen and examined sets at the Providence and Boston Athenaeums, at the State House Library in Boston, and at the New Bedford Library.

In a conversation with C. W. Cottrell of Harvard's Houghton Li-

brary, there inevitably arose the question, "How many copies of the Elephant Folio are there still in existence?" Of course, neither of us knew. Right there and then, I decided to do something about finding out. The "elephant hunt" was on!

At this point I might explain what records are available in planning the search for these elusive copies of the folio. In each volume of the Ornithological Biography, Audubon printed a list of the subscribers whom he had obtained up to the time of the publication of that particular volume. The total number of original subscribers, many with incomplete sets, came to 279. However, during the period of publication from 1826 to 1838, subscribers to the number of 118 had dropped off. In Volume Five, dated 1839, is a final list, divided into American and European subscribers who had received complete sets. The names total 161 (calling for 166 copies), of which 79 (with 84 copies) pertained to Europeans and 82 to Americans. Yet, in an advertisement appearing in the Athenaeum, under date of London, November 1, 1837, and evidently from the hand of Audubon, it is stated that "the number of perfect copies at the present subscribed for does not exceed 190, of which upwards of 80 are subscribed for in America."

This is a good place to point out that Audubon's first American subscriber was a woman, Harriet Douglas, of New York. They met in Edinburgh early in 1827. Miss Douglas was an amazing person and her story is entertainingly told by Angus Davidson in the book "Miss Douglas of New York," published by the Viking Press in 1943.

With the list published in Volume Five, I had a starting point. But it was evident that in instances other than those which applied to colleges, libraries, state institutions, or scientific societies, extensive research would be necessary to trace those copies originally in the possession of individuals, many of which, after 120 years, must have changed hands several times, or been broken up, or even burned, as I was to learn. In 1908 Ruthven Deane wrote that he had a record of "the present resting place of seventy-five copies owned in this country." This list I have as yet been unable to find.

*Continued on page 244*

Special wooden stand made for the display of the Elephant Folio set in the Museum at Charleston, South Carolina. Photograph by Louis Schwartz.





Rescue crews pick up ailing ducks by using a shallow draft air-thrust boat.

*All photographs, courtesy of U.S. Fish and Wildlife Service, unless otherwise noted.*

## AVIAN BOTULISM —

In the days before the development of air-thrust boats, refuge personnel used retriever dogs to recover sick ducks.

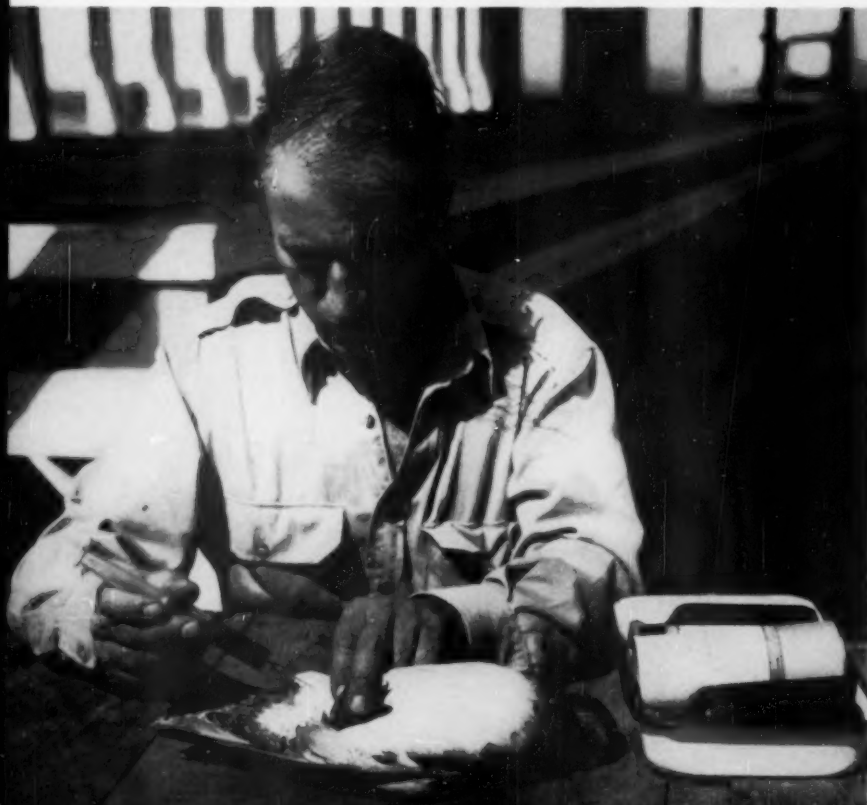




John Van den Akker picks up sick and dead ducks on the Bear River Migratory Bird Refuge.

## The Battle at Bear River

Sick birds are given injections of antitoxin at regular intervals in the hospital. A high percentage of the treated birds recover.



By Frank A. Tinker  
PART III (conclusion)

THE staff at the laboratory of the Bear River Migratory Bird Refuge, headed by Wayne I. Jensen and assisted by many student volunteers, are overwhelmed with work during the botulism outbreaks. They cruise the marshes of the refuge at such times in air-thrust boats of shallow draft to pick up ducks which are dead or so seriously affected they cannot try to escape. In the days before such boats had been developed, a retriever dog did this job.

Taken to the hospital, birds that are still living are given an injection of one milliliter of Jen-Sal antitoxin of equine (horse) origin, and are provided with clean food and water. Almost equally important, they are cleansed and given shelter and shade. The recovery in many instances under this treatment has been rapid and dramatic. In a day's time, some of the patients seem to progress from prostration to full recovery. Incidentally, this is not comparable with human beings, who have a very low recovery rate from the other types of botulism through the use of anti-toxin. Although such anti-toxin is given as partial routine treatment in botulism cases, its effectiveness, if any, is very slight.

As yet, there has not been a case of the Type C botulism reported in a human being. Whether this is because we are not exposed at any time to this particular toxin in sufficient quantities or for some other reason is not known. However, considering the unsatisfactory response of human beings to the anti-toxin in the case of common food poisoning—the type usually incurred through eating improperly canned food—no volunteer has yet come forward to be given a massive dose of Type C toxin. And, until more is known about it, the personnel at the refuge are unwilling to place any bets on the survival of a person so inoculated.

When the birds, which have been picked up from the marshes for treatment, can navigate under their own power, they are released in a hospital pond nearby. The last indication of their full recovery is simplicity itself—they simply fly away. Whether such birds go back to their place of original contamination is a matter under investigation,

since some seem to be stricken several times. In the laboratory it has been proved that there is no immunity developed to the toxin. Birds react to it in precisely the same measure three or four times.

One pintail, however, treated and banded at the hospital, apparently wanted to make sure he would never dip his bill in the Great Salt Lake mud again. He was reported a few months later from Palmyra atoll, a thousand miles south of Hawaii!

Generally, the ducks' reaction to the Jen-Sal anti-toxin, and treatment, has been varied, but the results have certainly justified its use. An average of 92 per cent of the birds moderately affected when captured (cases designated as moderate actually cannot make an effort to escape) have recovered after such injections, according to the records kept during the fiscal 1956 season. The severe cases, those in which the ducks are absolutely prostrate, usually lying exposed on islands or dikes for some

time before hospitalization, had a recovery rate of about 65 per cent during the same period. With hospital care alone 32 per cent of these severe cases recuperate; without such care undoubtedly all would have died of exposure. Mild cases are no longer hospitalized, since their rate of recovery without injection was too high to warrant it. Later, of course, many of these mild cases may have become moderate or severe and are then hospitalized.

During the last really severe and representative botulism season of 1952, more than 27,000 birds were picked up from refuge marshes. At least 20,000 of these were dead, but 6,233 which were alive were treated, and then released. During 1955 nearly 2,000 such rescues and recoveries were made. The time of stay in the hospital for the ailing birds varied from two to five days.

As for any higher resistance of a particular species—there seems to be none. At the refuge, pintails and

teal have been most affected; mallards, redheads, and shovelers were killed in lesser numbers. However, the season at which they are present at the refuge, their numbers there, and their method of feeding may explain any differences in the mortality rates.

At the present time, only ducks are treated in the hospital. Actually, 198 species of birds throng the refuge, of which at least 60 nest there. In addition to the teal and pintail, which arrive in daily seasonal flights of 100,000 or more; the marshes provide resting places for whistling swans, grebes, black-necked stilts, pelicans, cormorants, and many others. All these birds are exposed to botulism, and are affected by it in varying degrees.

Many of them, especially the gulls, pelicans, and cormorants, nest on the uninhabited and unapproachable islands in Great Salt Lake itself. Lacking any natural predators and only rarely visited by the few boats on the lake, they increase their numbers prodigiously each nesting season. They feed their young by making long trips to the shallow waters of the refuge.

Visitors are welcomed at the refuge, which is one of the few places in the United States where a person can see a million birds in a single day during migration. Roads have been built along the tops of the

Wayne I. Jansen, Director of Research at the refuge, inspects a group of ducks under treatment. Photograph by the author.



Miles of flat semi-submerged land in the refuge are





dikes from which observers can take exceptional photographs of the flocks of indifferent birds. Each year some 20,000 persons avail themselves of this opportunity.

As for the future of the battle against botulism, it will proceed as funds are available. In 1956, although the water level was generally low, the outbreak was almost unbelievably small. Only 74 dead birds were found at Bear River. Undoubtedly this small kill was due in some measure to the prevention efforts there, but the strange yearly variation in severity is still unexplainable. The only sure thing at this point is that the threat of botulism is there, and some birds will continue to be affected.

Meanwhile, significant discoveries are made each year. Temperatures of the birds affected have been taken to establish any connection between body temperature and recovery rates. It has been found that too much handling, in taking the temperatures of birds or in forced feeding, definitely retards the recuperation of those affected by botulism toxin. Wind action, water levels, abundance and type of aquatic plants present—all these things are investigated yearly in the hope that in one of them a clue may be given as to the further nature and transmittance of the toxin. These results are correlated with other studies of the U. S.

Fish and Wildlife Service in various parts of the country.

Any locality which is faced with the possibility of a botulism outbreak—which is roughly any shallow lake or marsh area in the western alkaline region—may follow the U. S. Fish and Wildlife Service's lead at Bear River: *either drain the area entirely or flood it as deeply as possible; also eliminate as much shallow shoreline as can be done practically.* Due to the size of the problem, the practicality of any such measure is bound to be the determining factor. Also, the whole matter of botulism is inseparable from that of proper land conservation, involving as it does good drainage, efficient water use, and a maximum of suitable waterfowl habitats. Unfortunately, the choice must be made at times as to whether to prevent the use of a waterfowl habitat, at least temporarily, or take a long chance on there being no botulism toxin present. If botulism is present, per-

haps the answer is to deny the use of the danger area to waterfowl during the late summer season by any means available. This would include aircraft, fireworks, or noise-makers of whatever description, to frighten the birds away from the poisonous area. Admittedly, these are crude methods, but to allow the birds to feed in the affected area would mean disaster.

A western traveler wanting to visit this remarkable way station and hospital may take Highway 89 north from Salt Lake City to Brigham. It is impossible to miss it: a sign arches completely over the main street, advising that this is the home of the nation's largest game bird refuge. Turn westward there, and follow a road 14 miles across the salt marshes to the offices and laboratories of the refuge. During migration seasons the sight there is unforgettable; during the botulism outbreaks, both inside the hospital and out, it is even more so.—THE END

The Refuge is one of the few places in the United States where one can see a million birds in a single day during migration. Photograph by Allan D. Cruickshank.



crossed by the Bear River.  
Photograph by the author.



# BIRD FINDING WITH *Sewall Pettingill*

WHERE TO GO • WHEN TO GO • WHAT TO SEE



THE Connecticut warbler, *Oporornis agilis*, is known to most of us as a transient in the migration seasons. The mere sight of it skulking through the underbrush makes our day in the woods a banner one. While there are other species as infrequently seen, some more striking in appearance or more pleasing to the eye, none gives us quite the same satisfaction. Why? The answer: it's a bird with a much-publicized, sometimes exaggerated, reputation for rarity.

The "rarity" of a species usually implies that its total population is low. This is not the case with the Connecticut warbler. Its rarity (in fact, as well as in reputation) stems from at least three of its attributes: its breeding range is restricted, both geographically and ecologically, to an area that is notoriously inaccessible to man; its migration route is eccentric; its behavior is peculiarly elusive.

## BREEDING RANGE

The Connecticut warbler breeds from the southern edge of James Bay and Upper Michigan westward for 1,800 miles to the border of Brit-

ish Columbia. In the east the breeding area between James Bay and Upper Michigan, northern Ontario and northern Wisconsin, central Manitoba and northern Minnesota has a breadth of 500 miles; farther west through central Saskatchewan and central Alberta to British Columbia it gradually narrows to a breadth of 100 miles or less. The Connecticut warbler's usual habitat in this vast stretch of country is dense spruce-tamarack bogs interrupted by places carpeted with sphagnum moss, pitcher plants, and low shrubs. Its habitat may also involve neighboring, drier places whose predominant tree growth is aspen with occasional stands of jack pine, birch, and balsam-fir and with a thick underbrush.

Several other North American warblers restrict themselves in the breeding season to the belt of northern, coniferous-forest habitats that extend from extreme eastern Canada and New England west to the foothills of the Rocky Mountains, but for some inexplicable reason the Connecticut warbler confines itself to the belt from James Bay west. This situation is reminiscent of the

breeding range of another rarity, the Kirtland's warbler, which nests only on the jack-pine plains in an area of Michigan 100 by 60 miles. Though similar plains with apparently the same ecological factors are in neighboring Ontario and Wisconsin at the same latitudes, no Kirtland's warblers are known to occupy them.

Our actual knowledge of the Connecticut warbler's breeding range is based on nests, singing males, or adults carrying food, discovered at widely separated points which ornithologists have penetrated. The total of all these findings is astonishingly meager when you consider the extent of the bird's whole breeding range. An examination of a map of the country within the range shows countless square miles of trackless wilderness, much of it poorly drained and consequently occupied by remote wetlands. My contention is that there are many thousands of Connecticut warblers nesting in this wilderness.

## MIGRATION ROUTE

When migrating the Connecticut warbler, instead of passing north and

south as do most birds, follows a roundabout route, often cited as the classic example of the eccentric type. Thus in the fall the bird goes eastward as far as New York and New England and then down through the Atlantic states; again resuming an easterly direction it passes through the Bahamas (New Providence Island), Puerto Rico (Monterey Island), and Curacao to South America, then south to Brazil where it winters chiefly. In the spring it generally returns to southeastern United States by the same route although it may also, according to fragmentary evidence, fly directly over the Gulf of Mexico. On reaching this continent it moves diagonally northwestward to the Mississippi Valley and thence north to its destination. Whereas the time of its fall migration coincides with that of most other warblers, its spring migration is later. The bird does not approach the southern periphery of its breeding range until the last week of May. This "delayed" arrival may well be caused by its circuitous return route which is longer and therefore takes more time to cover than the direct, north-south route.

The fact that the Connecticut warbler has an eccentric migration route contributes in no small measure to its supposed rarity. For one thing, the species passes through one part of the country only once a year, not twice as do most species; hence the chances of its being seen in a given area are half as great. For another, it moves through the eastern United States in the fall, when bird watchers are not as active as they are in the spring; thus it is much less likely to be recorded regularly in the East. For still another, it goes through the upper Mississippi Valley late in May, when the foliage is fully developed; the height of the main migration has long since passed; and the majority of bird watchers have stopped following migration. This results in its not being seen as often as other transient birds in the same general area.

#### ELUSIVE TRAITS

Certainly the Connecticut warbler's elusive traits in migration help to foster the species' reputation for rarity. Never flocking, never feeding in the open, never moving quickly—it seldom does anything

to attract one's attention. Individuals migrate silently, widely separated, and alone. During the day they stay in wooded country, where they strongly prefer the foliated underbrush with which the colors of their plumage, in either spring or fall, closely blend. Whether walking on the forest floor, or going from branch to branch through brush—whatever they are doing, their actions are exceptionally slow and deliberate for a warbler. (A curious paradox is that, of all the warblers, the Connecticut should have *agilis* for its specific name!) Unexcitable to the point of being almost phlegmatic, they rarely utter an alarm note. If disturbed by the nearness of the bird finder, they simply slip away, unflurried, literally vanishing into the greenery. The only time, so far as I know, when the Connecticut warbler seems out of character is when it nears the end of its spring journey. At that time the males begin to give their unmistakably loud, clear songs.

Because the Connecticut warbler sings toward the end of its spring migration, it is not surprising that there are more records of it in spring than in fall. I have seen it several times in eastern Iowa and southern Minnesota. In all cases I was attracted by the song; in all cases I found a lone bird sitting quietly, almost motionless. Despite the great number of hours I spent in the field in southern Minnesota during late May, I never found an individual in any other way. Now and then I have wondered how many Connecticut warblers, perching peacefully, have watched me as I unknowingly passed them!

Nocturnal accidents to the Connecticut warbler in migration have sometimes produced knowledge of the species in an area where field work has failed. Recently one was killed near Topeka, Kansas, by striking a television transmitting tower. There had been no previous record of the species in the state. A few years ago, as many as ten individuals were killed in one night by flying into the Empire State building, New York City. Such instances are further evidence that the Connecticut warbler can be passing through an area, occasionally in considerable numbers, without our being aware of it.

#### EARLY HISTORY

The names of two famous naturalists are indelibly written into the known history of the Connecticut warbler. One is Alexander Wilson, "the Father of American Ornithology," who discovered the species in 1812 and named it for the state where he found it (probably a migrating bird). The other is Ernest Thompson Seton, who found the first nest on June 21, 1883 in Manitoba. Many other naturalists and ornithologists, well-known and otherwise, have hunted for nests, but amazingly few have been successful. I would hazard a guess that you could count on the fingers of both hands all the people who have themselves discovered nests. Evidently the elusive traits of the Connecticut warbler in migration are even more effective on the nesting grounds where the habitat is dense and very difficult to explore. True, the males sing here with their accustomed vigor, but their singing positions usually prove to be poor clues to the position of the nests, which may be far away.

#### WHERE TO FIND THE CONNECTICUT WARBLER

Doubtless you have been disappointed, when using the indices in my guides, to find no reference to places where the Connecticut can be observed in the nesting season. The reason is, of course, that I was unable to obtain precise information. But now, thanks to Mr. G. Stuart Keith, I am able to tell you exactly where, in two different spots, you can observe singing males.

Keith, a young Englishman touring this country to augment his life list of birds, went west via Upper Michigan and northern Minnesota for the expressed purpose of getting acquainted with the Connecticut warbler and other northern species. In the first spot, near Ewen, Michigan, he observed as many as six singing males; in the second, southeast of Baudette, Minnesota, he found the species common. Indeed, by the time he had counted 15 singing males, he stopped noting the number! If this local population on the southern fringe of the species' breeding range is a sample (as I think it is) of what lives north, in the heart of the range, you can well understand why I contend that there are many thousands of Connecticut warblers.



#### IN UPPER MICHIGAN

Starting from Ewen in extreme western Upper Michigan, you should drive east one mile on State Route 28, then turn north (left) on an unnumbered gravel road just beyond the cemetery. Follow this road, which goes north about four miles, west for one mile past three farms (on the right), and north again past one farm (on the right). This last farm is the vacation home of Arthur Peters. (It was he who first discovered the Connecticut warblers. Later he informed Larry Walkinshaw, Powell and Betty Cottrille, and Bill Dyer, who put Keith on track of the birds). Leave your car at the Peters farm, as the road is poor from this point on, and walk north. After about a mile, the road begins to traverse the Connecticut warbler area—principally aspen woods with an admixture of spruce and balsam-fir. The birds sing on either side of the road for the next mile. Keith found the birds singing only in the morning, even though it was no later in the season than the last of June. In the area, there is an interesting variety of bird species, which include the common raven, red-breasted nuthatch, mourning warbler, and slate-colored junco. Close by the Peters farm, Keith observed a golden-winged warbler and clay-colored sparrow. Both were singing.

#### IN NORTHERN MINNESOTA

The Connecticut warblers are in the Red Lake Game Refuge, Minnesota (see my western guide under Baudette). Proceed from Baudette to Roosevelt as directed. At Roosevelt turn south at a flashing yellow light onto a gravel road (County Route 5) and drive south for about 15 miles to a road junction near a warden station. The road you are on continues south two miles to Norris Camp, the office of the supervisor. But at this junction you turn left (east) and drive toward Faunce Junction, ten miles distant. Along this road Stuart Keith found nine singing Connecticut warblers, the first one at a point 2.6 miles from the junction, and the last at six miles. Some of the other birds he noted during his search from this road were the solitary vireo, black-throated blue warbler, chestnut-sided warbler, and pine warbler.

At the point about six miles from

the junction, turn off left (north) on a rather obscure dirt road where there is a very faded sign pointing to Olson Camp. Drive on it about 100 yards, then park your car in a clearing. Continue on foot along the road, which becomes impassable to ordinary motor vehicles. In about 100 yards the road enters and begins crossing a spruce-tamarack bog. Along this road for about a mile Keith located four singing male Connecticut warblers and the following singing males of other species: six Tennessee warblers, four Cape May warblers, and one bay-breasted warbler. Other species he observed included the yellow-bellied

flycatcher, gray [Canada] jay, Swainson's [olive-backed] thrush, magnolia warbler, pine siskin, and white-winged crossbill.

On entering the Red Lake Game Refuge you may wish first to go directly to Norris Camp. With the supervisor, Keith left a map showing the exact locations of all the Connecticut warblers he found. Not only will this be useful to you, but the supervisor himself will doubtless be able to give you a report on road conditions (they may be bad in June) and further details on directions to the spots you want to visit and the birds you want to see.

—THE END

## Nantucket Ornithological Station Established

The Northeastern Bird-Banding Association has established, at least for the years 1958 through 1960, a new Nantucket [Mass.] Ornithological Research Station, with John V. Dennis as director.

Mr. Dennis is well known to readers of *Audubon Magazine* as a contributor to "Attracting Birds," and as the author of articles such as "Are Warblers Decreasing?" He has also contributed articles to *Bird-Banding* and the *Bulletin of the Massachusetts Audubon Society*. For the past 12 years he has had an interest in Nantucket birds, particularly during the fall migration. During the 1955-57 seasons, his work there was supported by a grant from the Old Dominion Foundation. Mr. Dennis will be assisted by Mrs. J. Clinton Andrews (Edith Folger), co-author (with Ludlow Griscom) of "The Birds of Nantucket."

The committee named by Edwin A. Mason, President of the Northeastern Bird-Banding Association, to administer the project includes:

- (1) Mrs. Roy E. Larsen, of Fairfield, Conn., and Nantucket, an active bander whose generous gift made the project possible;
- (2) Aaron M. Bagg, a specialist on migration, and Secretary of the Wilson Ornithological Society;
- (3) James Baird, director of the Norman Bird Sanctuary at Newport, R. I., and co-ordinator of Operation Recovery (a cooperative study

of fall migration in eastern North America; see an article in the July 1958 issue of *Bird-Banding*—a limited number of free copies are available by writing to Mr. Dennis, 17 Liberty St., Nantucket, Mass.);

- (4) John H. Conkey, a retired banker, who has been named Assistant Treasurer of the Association to handle project funds; and
- (5) E. Alexander Bergstrom (chairman), editor of *Bird-Banding*.

Much of the work of the station will consist of participation in Operation Recovery, including a number of special studies such as the weight of migrants, or the unexplained presence of the yellow-breasted chat in fall north of its breeding range. As time permits, the station will study breeding birds of Nantucket and nearby islands, and the little-known spring migration there.

Like Operation Recovery in general, the Nantucket Ornithological Research Station will count on the help of many amateurs, principally for banding but also for observation. Every year more bird watchers realize that their interest need not be aimless to be highly enjoyable. In enlisting the help of amateurs, the station follows the example of many European bird observatories, such as Fair Isle (north of Scotland) and Skokholm (off Wales).

—E. ALEXANDER BERGSTROM

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## DESCENT TO A BOREAL SWAMP

Continued from page 208

*aedaphne calyculata*, contend with each other for domination and survival.

Where the ground seems unsteady, the visitor would do well to trust his weight to the cassandra shrubs, which border the indistinct and sometimes criss-crossing trails. In their proper season, wildflowers blooming here are snake mouth, *Pogonia ophioglossoides*, dragon orchid, *Arethusa bulbosa*, and grass pink, *Calopogon pulchellus*; also purple-fringed orchis, *Habenaria psychodes*, club-spur orchis, *H. clavellata*, and mountain yellow-eyed grass, *Xyris montana*. The white plumes of cotton-grass, or hare's tail, *Eriophorum spissum*, tower over shrubby heaths and the trailing cranberries, *Vaccinium oxycoccus* and *V. macrocarpon*.

As one emerges upon the muskeg the two-parted song of the Nashville warbler, beginning in measured tempo, and quickening at the close, comes from the graceful tamaracks, though the songster is sometimes located with difficulty. In some years the rich warbling of purple finches and the easily overlooked call-notes of cedar waxwings are added to the insistent song of the Nashville, and the territorial proclamations of the yellow warbler, golden-winged, and chestnut-sided.

At dusk the white-tailed deer become active, and, as shadows lengthen, raccoons are abroad, cottontails, opossums, and red foxes. The beaver and muskrat are still here, and the local people estimate four to five black bears regularly wander through the swamp as part of their "self-appointed rounds."

Though much smaller in extent than the true muskegs of the North, these relict bogs and swamps furnish the students of nearby schools and colleges with an opportunity to study the life forms found in these persistent boreal forests. Graduate students from Rutgers University and the University of Pennsylvania; undergraduates from Union Junior college, 75 miles distant, in Cranford, N. J.; and young naturalists from local high schools visit Cranberry Swamp to study its plants and animals.

Having visited the swamp we are in a position to evaluate its wealth in northern plants and birds, and

to compare it with the red spruce forests of the southern Appalachians. A number of northern birds breed in the red spruce forests that do not breed in Tannersville Bog—the sapsucker, red-breasted nuthatch, winter wren, golden-crowned kinglet, mourning warbler, and others. However, all the boreal species known to breed in the southern Appalachians occur at one or more stations in the middle Appalachians (Pennsylvania, northern New Jersey, southern New York), though some of them live in the deciduous forests. It seems, therefore, that if studies are made of the boreal spruce stands alone, then the extensive red spruce forests are slightly richer in northern breeding birds than the relict black spruce swamps farther north. The reverse situation seems to prevail with the plants. Several northern species characteristic of the black spruce swamps, do not occur farther south under any condition than the middle Appalachians. Among those species missing in the southern Appalachians are mud sedge, hare's tail, wild calla, mountain yellow-eyed grass, dwarf mistletoe, and bog laurel.

What will be the fate of the black spruce swamps? If untouched by man they should persist for a long time. They will in all probability eventually succumb to natural invasion by red maple, yellow birch, and hemlock, to be followed by numerous species of deciduous trees. Ecologists in those future decades will have to travel far to the north to witness what we have, today, near at hand.

Enjoyable as the study of such a boreal swamp may be, there is a practical value the swamp affords, which has greater import to the local residents than a listing of its plants and wildlife. The devastating floods which swept through Monroe

County, Pennsylvania, in the wake of hurricane "Diane" in 1955 clearly demonstrated its value in flood control. The water-holding capacity of this relatively untouched swamp, with its stream banks clothed by plants, prevented torrents from washing out the downstream bridges. Any swamp with an abundance of water-loving sphagnum moss, and its accompanying sedges, shrubs, and trees, could have performed service equal to that of the Cranberry. Nearby rivulets and creeks with eroded banks, and no swamps along their courses, were swelled to sizable rivers. The torrential force of the flood-waters dislodged bridges, destroyed homes, and took a heavy toll of human life. Surveying the damage in the county later, and realizing the value of such water-holding land as Cranberry Swamp, a committee of local residents undertook to preserve it.

In January 1957, Tannersville Bog Preserve was bought for \$2,000, with the help of many local groups, including P.T.A., Boy Scout, and civic organizations. In the future, the groups hope to increase the size of the preserve which is to be maintained in a wild state, the title to be held in the name of the Nature Conservancy.

The post-war building boom has seen the destruction of numerous wetlands. Garbage dumps have in some places supplanted swamps, those vital reservoirs of water. The action of the residents of Tannersville and vicinity in attempting to establish the Cranberry as an outdoor museum is encouraging. Others throughout the country might do the same where areas worth preserving are close at hand. They should organize with a view to obtaining an option on representative ecological areas (or outright purchase, if possible), before these areas disappear.

In the future decades, as the sun moves in an arc across our sky, may it still brighten successively, unspoiled sand dunes, salt marshes, pine barrens, deciduous forests, prairies, plains, mountain lakes, deserts, and redwood forests. May young naturalists still enjoy seeing the wildlife of natural areas. The present generation owes it to those that follow to preserve as many unspoiled habitats as we can. We cannot afford not to.—THE END

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## Attracting Birds



## Birds Like Dripping Water\*

By Kay Altsheler

Birds like dripping water. They seem to know it is fresh and they seem to be as critical of hot, dirty water for drinking and bathing as are humans. Their senses of sight and hearing are much more acute than in human beings and the sight and sound of dripping water attracts them from great distances. My husband Yancey and I believe that supplying them with running water—winter and summer—is even more important than keeping our bird feeders filled with corn, sunflower seeds, fruit, and suet.

At Wing Haven, our small bird sanctuary within the city limits of Louisville, Kentucky, we have a three-level birdbath built into a storm retaining wall. A copper pipe running under the patio floor from the basement supplies the water. We keep it turned on both summer and winter. The water appears to run naturally from a small hole near the top of the five-foot wall. It drips into a depression in the top stone, flows over into a larger stone and then again over and down into a small shallow pool at the base.

It is important to remember when constructing a birdbath that all land birds are afraid of deep water. No birdbath should be deeper than three inches at its center and it should always slope up to not more than one-half inch deep at the edges. Ours is even more shallow than this. The depressions in the two upper rocks are not more than one-half inch deep at the center and the pool is in no place deeper than two inches.

The excess water around the pool is absorbed by plantings of forget-me-nots, ferns, English thyme, Ajuga, and, in the spring, with some wildflowers and small bulbs. There is enough low evergreen shrubbery nearby to serve as cover for the birds in approaching and leaving the birdbath. There is also a large Amer-

ican elm above the wall from which they can survey the situation before dropping down for a drink or a bath. They use its many limbs for drying and preening themselves.

Everyone knows that during hot, dry summers the birds have difficulty finding water. That is why so many of them are attracted to the spray of a garden hose. Too few people realize that during freezing weather the birds suffer for lack of water. We turn our water on full force during below-freezing periods and our birdbath often resembles a miniature frozen Niagara Falls. The force of the water keeps a small pool open for our winter bird friends. Birds which we may never see the rest of the year come to us at such times. Bluebirds prefer open country but when they can find water nowhere in their own natural habitats they sometimes come to us.

In addition to supplying the birds with one of their main necessities for survival our birdbath furnishes a wonderful place to observe their habits. We can sit in the living room behind a large picture window and watch them as they drink and bathe. If we do not move around we do not frighten them. They do not seem to mind our voices but they leave immediately if they see movement nearby.

We have identified 98 different species in our yard and at least 63 of these have visited our bath. Most birds are very polite to each other when bathing and drinking. Many of them do not like to bathe if there are others in the pool. Smaller birds defer to larger ones and usually the females defer to the males of the same species. Certain species may bathe together when they will not bathe with other species. Some birds are gregarious in their bathing habits. These seem to like to splash each other. Some bathe regularly at definite times. Some stay in the water a long period and others only a few seconds. Some fly far away to preen and dry. Others stay close by. Some birds bathe, dry

Turn to page 234

\* Reprinted from *The Bulletin*, the Woman's Club of Louisville, March 1958 issue, courtesy of the author.



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and preen, then return immediately for a second and third bath. Some get their feathers so ruffled that we can hardly identify the species. Others never seem to disturb a feather while bathing. Most birds face toward the direction from which danger might come and after each duck of the head glance quickly in all directions to see if all is still safe. Some sing while they bathe. Others remain quiet. Some never go into the water. These just take several good drinks and are off again. Many drink first, then bathe. In drinking most birds put their bills in the water apparently draw some of it into their throats and then throw back their heads in order to swallow. The mourning dove is an exception. It is the only bird we have seen drinking from the pool as would a dog or cat or horse without having to throw back its head.

Our birdbath is always rewarding. Of course, there are peak days when we have every level of it occupied at once, several times a day. Such days are usually during spring and fall migration periods or during prolonged dry or below-freezing weather. Warblers are particularly attracted to dripping water and there have been times when we have had a different species in each level of the bath. Many of our nesting birds usually bring their young to the pool as soon as they are able to care for themselves. For that reason June and July are probably the most exciting months we have.

I have mentioned the drinking habits of the mourning dove. When it bathes it is very dignified, stays but a moment, then flies to another part of the yard to preen. The woodpeckers rarely visit the bath. The one exception is the flicker which comes fairly regularly to drink. We have never seen one of them bathe. Normally a woodpecker clings horizontally to a tree trunk or limb. When the flicker drinks it assumes an unnatural position for a woodpecker. It squats vertically on the top stone, draws the water in through its bill and then throws back its head. During the spring and summer, crested flycatchers, wood pewees, and phoebes come to drink. Of these, the crested flycatcher is the only one we have observed bathing. The noisiest and perhaps the least polite of our bathers are the blue jays. Very few birds will get into the pool with them. They do a great deal of splashing and talking.

The Carolina chickadees and the tufted titmice—cousins in the avian world—we have all year. The chickadees stay in the water a long time, the titmice not so long nor so often. Our two wrens, the Carolina and the house wrens, seem to do more drinking than bathing. The mockingbird is with us all year and though it does not bathe

as regularly as some birds it does come for several drinks each day. The catbird really asserts itself at the bath. It bathes long and often but I have yet to see a ruffled feather on this tailored-looking species. The brown thrasher is much more shy than either of its two relatives. It bathes occasionally during spring and summer, and, like many of the other birds, brings its young to the bath after they are old enough to care for themselves.

Sometimes we have so many robins lined up for baths one is reminded of people on a bathing beach. Wood thrushes love water, too, and we have seen as many as four bathing at one time. They seem to prefer the early morning and late evening for their baths. Occasionally they will come after dark. While one perches near, on guard, the other splashes.

The only time we have ever had cedar waxwings at the birdbath was during a below-freezing period in November 1956, when there was no other water in our area for at least a week. During that week, several times a day a flock of these lovely birds visited our pools. They did not bathe but seemed to drink their fill every time they came.

Of course, we have starlings and English sparrows. Much as we dislike the starlings in many ways, they are certainly clean birds and take more baths than any other birds we have observed. Many of them will bathe at one time. This is also true of the English sparrow, though I would not classify that species as very clean in other ways.

We think the best way to study warblers is to attract them to water. While they usually stay with us but a short time, they do not seem as restless while bathing as when they are chasing insects from branch to branch, and from tree to tree. Of the 36 species of warblers on the Kentucky checklist we have identified 25 at Wing Haven. At least two-thirds of these have come to our birdbath while we were watching. On one memorable day in the spring of 1957, we identified 12 species of warblers drinking or bathing. Sometimes several species bathed together, and very often they came in pairs.

The "vainest" of all our visitors is the male summer tanager. He often requires four or five trips to the pool to complete one bath. Between each dip he flies to the same limb on our beech tree and preens and suns himself. He seems to know that there is no more beautiful color in the bird world than the particular shade of red he wears.

We have had grackles, cowbirds, and red-winged blackbirds of both sexes and in various plumages at our birdbath. Once we had a beautiful male Baltimore oriole, and once a rose-breasted grosbeak. Goldfinches come in flocks in



the spring and summer, and juncos in the fall and winter. The towhee comes occasionally, early in the morning or at sundown. There is never a day without several cardinals. We love our cardinals at all seasons but I think we appreciate them most in the winter. The sight of a beautiful red male against the snow and ice of our frozen "Niagara" is something we do not forget. Another bird we have all year but appreciate most in the winter is the song sparrow. Of all our birds,

this one seems to love water the most. We see it at all times of day, in all temperatures, and under all conditions. We have even watched it bathing during an almost torrential downpour. It just never seems to get enough water!

We have other birds on our list and we hope to add a few more each year. We are convinced that our main attraction for our bird-friends is fresh, dripping water. They like to hear it, to see it, and to use it.—THE END

#### FALCON IN THE SKY — Continued from page 203

not based on sound knowledge, and that the persecution of hawks and owls is even detrimental to man's interests. Others are now joining us. For a long time the nature lovers, who wanted to see this persecution stopped, have been voices crying in the wilderness of ignorance and prejudice, but now there seem to be at least some ears to hear their cries.

There have been in my memory three stages in the effort to block the slaughter of these birds of prey. These three stages might be called: the economic, the scientific, and the aesthetic.

(1) The first stage was the *Economic*, or *Practical*, although in the end, like so many things labelled "practical" it was not practical or common sense at all.

In that stage, hawks and owls, and indeed all other animals, were looked on simply as man's possessions. An animal — bird or mammal — was not thought of as having any rights of its own. It was looked on as existing only for man's benefit — for his use, or sport, or, if he chose, as something for him to destroy. If it were worth man's while to wipe out, or assist in wiping out, a fine creature like the passenger pigeon, or an interesting and highly specialized species like the great auk, there was no reason why he should not do it. To be sure, there were "cranks," who protested against such an assumption of divinity on the part of mortal man, but they were called "zoophiles" or "sentimentalists" and largely ignored.

Naturally, in such a situation, the only appeal was to man's selfish interest, the appeal to his economic interests, or at best to his fairness when it could be shown him that a particular species did him and his possessions no damage. The basis for the fight against persecution of hawks and owls was the study of food habits, by laboratory analysis

of stomach contents and by field observations around nests; thus to show that while some hawks might be harmful to man's economic interests, others were beneficial to him.

This kind of study resulted in the division of hawks into the "bad" hawks and the "good" hawks; or rather into three classes—beneficial, neutral, and harmful. The "harmful" hawks turned out to be particularly the Cooper's and sharp-shinned, which happen to be the most difficult for the farmer or sportsman to shoot. The rest were shown by this method to be mainly beneficial to man's interests. And in general, by the control of rodents, which do so much damage to man's crops, all of the hawks and owls taken together do man far more good than harm. It has been estimated that a pair of barn owls is worth at least \$30 a year to a farm.

I remember how, about 30 years ago, the apple growers of the northern part of the Valley of Virginia were having serious trouble with small mice girdling the roots of apple trees. Experts were called in, only to tell the orchardists that they had brought this plague on themselves by destroying all hawks and, particularly, the little screech owls. Men who had previously shot screech owls, put up nest boxes for them.

We do have to acknowledge that on this basis we do not get anywhere for our falcons. They are almost exclusively meat eaters, with a small proportion of insect food. But as P. A. Taverner ("Birds of Canada") has remarked, turning from the purely practical aspect: "There should be enough game in the country to support so picturesque a character without arousing the jealousy of other hunters."

(2) The second stage in the battle against the persecution of birds of prey was the *Scientific*.

It might be called the Ecological

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Stage, for it was an effort not simply to study the hawk in relation to man, but in relation to the whole natural environment in which it lived. This is certainly more truly "practical" than the barely practical first stage.

From this viewpoint there are no "good" hawks or "bad" hawks; there are only natural hawks. Predation is a perfectly natural part of the system of life. From a "small bird's eye view" any hawk is bad. But from a "worm's eye view," a robin is the most vicious creature imaginable; and the more of them the hawk catches the better the worm should like it.

Predation is not only natural, but is necessary. The research of this scientific period began to show several things in succession.

(a) Predation is not always harmful to the species preyed upon, but is often beneficial. It is harmful to the individual bird indeed, but at the same time helpful to the species. It is necessary for nature to keep every species "on its toes." If there were no struggle for existence in nature, there would be no advancement in nature. It is only in the case of man, where (we hope) intelligence plays a part, that there can be any loosening of this law; and even there it is dangerous.

If in nature there were, for example, no natural checks on the bobwhite, unfit individuals would reproduce their kind, with a consequent degeneration of the stock. It seems likely that predators take chiefly the slow, the weak, and the sickly bobwhites, leaving the stronger individuals to carry on the race. We have learned that a species can stand a reasonable amount of predation, whether from natural enemies, like hawks, owls, foxes, weasels, or even from unnatural enemies like man, supported as he is by automobiles and high-powered weapons.

(b) This scientific research developed the concept of the Balance of Nature, or the Web of Life.

We can overdo the concept of the balance of nature, if by it we mean letting nature entirely alone. Since man has come into the picture, there is no longer any balance of nature, with which there should be no interference. From now on we have to do the best we can in a confused situation, interfering as little as pos-

sible, and only where we have reason to think our interference is in accord with nature's trends. For instance, there is no use in killing off the screech owls, and then being overrun with a plague of mice; or of killing off coyotes, and having a plague of jack-rabbits; or of killing off all mountain lions and in consequence ruining the Kaibab Forest with too many deer.

In turn we have learned that predation is only one and by no means the chief factor in the welfare of a species. The limitations on the numbers of the species are ecological, predation being only one of the elements. The relation between the number of quail on a farm this spring and the numbers left next spring, is dependent upon food and water and cover. A farm will have as many quail as it has food to support them and cover to protect them.

Now, with this better understanding of the unity of all living things—plant, animal, and human—there is coming a new sense of our own place in this "web of life."

(3) And so we are entering a third stage—the *Aesthetic*, or *Comprehensive*.

(a) It means, for one thing, the realization that the general public has its concern for and its rights in the outdoor world and its use, along with farmer and sportsman, along with commercial interests of mining, grazing, and lumbering.

The boy with his pole, as he fishes the stream, needs to hear the kingfisher's rattle and to see its flash of blue, entirely apart from the scientific fact that the kingfisher's eating of some fish is a small matter. Visitors from the cities to our beaches have the right to watch the parade over the surf of the brown pelicans and the file of cormorants on the pilings, even if they do take some fish. The wild hoot of the great horned owl in the dark woods is worth an occasional hen. And most of all, the pageant of the peregrine in the sky justifies his meals of ducks or flickers.

(b) It means, for another thing, that the social sanity of our modern life depends upon a good measure of nature in our schedule. Aldo Leopold, in the first sentence in "A Sand County Almanac," says that "There are some of us who can live without wild things, and some who

cannot." I take it that the reason you are members of the Virginia Society of Ornithology is that you are one of the "cannots." "For us of the minority," writes Leopold, "the opportunity to see geese is more important than television and the chance to find a pasque-flower is a right as inalienable as free speech." More people need to join that minority, if our nation's life is to be sound.

You have but to visit one of our national parks, to know that there are people in increasing numbers in our land who feel the need of a direct contact with nature. That intangible but very real value is at the heart of our conservation efforts. I have not in a long time been so proud of America as when I read in "Wild America" what Roger Peterson's companion on their circumcontinental trip, James Fisher, the English biologist, said about the wonder and wisdom of our national park system. Not only for these parks and others which need to be set aside, but for every bit of wild America around each town and village we must be ready to labor and to fight.



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America is no longer a pioneer nation, where all of us stand on the ground and can look out into the woods. Too many of us now stand only on the concrete, and it gives our spirits fallen arches. Too many of us look out only on steel and brick and mortar, and the eyes of our minds grow dull. There is danger that we shall become increasingly more shrewd and increasingly less wise.

There are curses as well as blessings in civilization. The contact with nature is one of the things that will

restrain those curses. It is not only a tragic thing to wipe out a species of wild bird or mammal that has been a hundred million years in the making; to cut back all our forests to a dull uniformity of second-growth; to squander our natural re-



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sources of soil and water; it is not only a tragic thing but it is suicidal for us to brush aside all simple, natural things and become but urban tenants, who do not truly own the ground on which they live because they never see or know the life it creates.

I have talked about the peregrine. I have, of course, been thinking of him as a plain, real, and wonderful fact in our wild America. But as much, I have been thinking of him as a *Symbol*. In his grace and power, in his skill, he is the symbol of all that is beautiful and exciting in the world around us.

He is the symbol of wild America, elemental and untamed, symbol of the delight in beauty, symbol of the freedom to which we must hold, if life is to continue to have in it any simplicity and zest.

He is the symbol, not of God's final and finest gifts indeed, for those lie in the realm of personal relationships, human and divine; but symbol of God's first and simplest gifts, the nature from which we have come, and to which, if all our hope of advancement in intelligence and in spirituality are to be realized, we must continue to hold fast.

—THE END

### BIRD'S-EYE VIEW — Continued from page 204

of the problem of securing live specimens of virtually every species and subspecies of reptiles and amphibians east of the 100th meridian and then keeping them alive and healthy, sometimes for months, almost staggers the imagination. Four years and the assistance of scores of friends and colleagues were required to complete this part of the project. On one of my field trips I saw a live leatherback turtle tethered to a boat dock at Cape May, New Jersey, but I did not know at that time that this was the only species of live turtle that the Conants had not been able to locate. They were forced to use a photograph of a dead one, the only such illustration in the book.

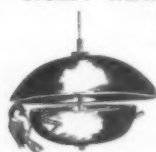
The amateur naturalist who is interested in herpetology, the science

of reptiles and amphibians, has a distinct advantage over his fellows. Unlike the bird watcher, he can catch and handle his animals, and unlike most botanists and entomologists who must dry and mount their specimens in order to preserve them, the herpetologist can keep his captives alive, often for long periods of time. He can study them and enjoy them as pets. The keeping of live reptiles and amphibians has become an important adjunct of the biology classroom and of the summer camp.

Simultaneously with the reptile and amphibian book the new "Field Guide to Trees and Shrubs and Vines," by George Petrides has just been published. This had been in the works for at least ten years. Since the war in fact, for I had originally intended to do this title myself. But when Dr. Petrides, now a professor of wildlife management at Michigan State University, showed me what he had done I decided to drop my own plans and contribute a few of my own ideas and drawings such as the tree silhouettes. The silhouettes of trees, however, are not as dependable as those of birds; they do not always hold true. A tree growing alone in the open will develop a wide crown, whereas a tree of the same species growing in the crowded woodland may be quite restricted and spindly.

Petrides has followed the analytical "Field Guide" system to its logical conclusion and for the first time I feel that many of us shall be able to name correctly some of the more confusing oaks and ashes, not to mention the many intriguing shrubs that are often lumped hopelessly as "bushes." We went over the galley proof of this book last year in Ugan-

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da—of all places. George was making a hippo population study in Queen Elizabeth National Park at the time Bayard Read and I came through. I seem always to be taking my work with me on these trips. In fact I finished the last two wash drawings for my "Bird Watcher's Anthology" on the shores of Lake Victoria. (It was difficult to get into the proper mood to portray an old-squaw while hornbills and plantain-eaters graced the equatorial landscape outside my window!)

Junea Kelly of Alameda, California, urges me not to go on any more trips until the revision of the "Field Guide to Western Birds" is finished. I have, indeed, been afraid to show my face along the Pacific coast of late, feeling a sense of guilt because of the long delay. I hope to report soon that this long overdue manuscript and the new plates are in the hands of the printer.

Texas, always threatening secession, is going to secede from the Eastern and Western Field Guides. Texans are tired of carrying two books, one in each pocket, and now want one of their own. The Texas Game and Fish Commission has arranged for a special edition, one which combines the appropriate plates from both the eastern and new western books plus a few special Texas illustrations. In the text the emphasis will be on range and distribution in Texas.

It has been an eye-opener to me to see the effective field work being done throughout the state by members of the well-organized Texas Ornithological Society. Had the check-list committee only submitted rough drafts of its manuscript to several of the experts in the Lone Star State the statements of ranges in the new A.O.U. Check-list for that important sector of our country would have been a bit more precise.—THE END.

#### LETTERS—Continued from page 202

whet owl to be a more consistent and common fall and winter visitor to Dublin than has been supposed.

John Alexander Hardy's letter, published in your January-February 1958 issue, told of pileated woodpeckers at his suet feeder and asked, "Do you know if anyone has recorded such a thing heretofore?" In May 1956, a male pileated woodpecker began coming to one of our suet feeders on a maple tree in front of our house. He often came sev-

eral times a day and showed no fear of us if we were sitting on the porch. By June he was as much a fixture at the feeders as the hairy and downy woodpeckers, which also visited us. We shall never forget the amazed expression of the carpenter who, after driving several nails into our porch with resounding blows of the hammer, turned to find the pileated woodpecker watching him from the suet tree, 13 feet away.

The pileated continued to visit us until we left for our summer camps late in June but, though we left a large piece of suet especially for him, he had ceased coming when we returned toward the end of August. Nor have we ever succeeded in attracting one since.

As we wrote this, in early February 1958, three feet of snow covered the ground, and three inches of snow covered the branches of the hardwoods. Yet a robin, which had first appeared on January 23, was still with us. It seemed to exist on the rotten apples which still hung on the branches of some trees near our house.

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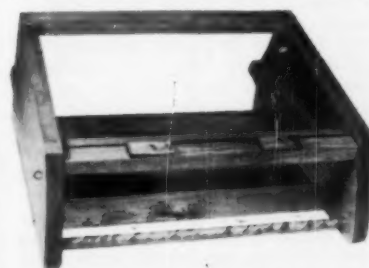
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"...a lucid, understandable book... he has dissipated much of the nonsense about snakes and distilled a good deal of the proven fact."—*N. Y. Times*

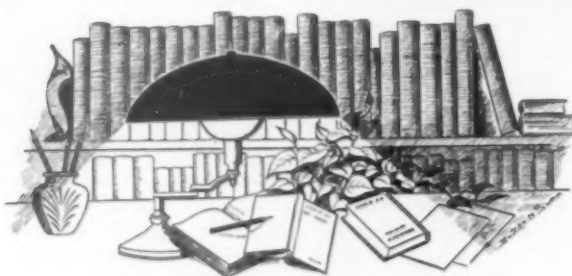
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## BOOK NOTES



By Amy Clampitt, Librarian, Audubon House

### LISTENING IN THE DARK: THE ACOUSTIC ORIENTATION OF BATS AND MEN

By Donald R. Griffin, Yale University Press, New Haven, Connecticut, 1958. 9½ x 6¼ in., 413 pp. Illustrated. Indexed. \$7.50.

That bats find their way about by ear is a discovery so recent as still to seem just faintly preposterous. The generally accepted belief up until around 1945 was, of course, that they depended upon their sense of touch. Yet as long as a century and a half ago an Italian, Lazare Spallanzani, had performed experiments remarkably like those which have led, in our own generation, to the defeat of this stubborn notion. Here, in fascinating detail, is an account of the triumphant theory—the ups and downs, the setbacks, the repeated mystifications, and the painstaking and ingenious means by which these were eventually unravelled. The bats themselves turn out to be more astonishing in fact than they ever were in the creepiest folklore. Hardly less so are the whales and porpoises, the South American oilbird, and the Asiatic swiftlet (the same whose nests go into a famous soup), all of which have likewise been demonstrated to use a form of sonar in finding and avoiding objects. In addition to a discussion of the human adaptations of echolocation, particularly for the possible use of the blind, Dr. Griffin directs his alert and wide-ranging scientific imagination upon some of the deeper zoological puzzles which controlled experiments may yet solve. He is an engaging writer, with an acute but soft-spoken wit that is eminently suitable in one who has dealt much with night-flying animals. To those who would be reassured concerning the health of American science, and to anyone—even one for whom the chapters on the physics of sound may be rather rough going—who would know of what the scientific method consists, this book will be as rewarding as it is illuminating, and it is recommended without qualification.

### THE TREE IDENTIFICATION BOOK

By George W. D. Symonds, M. Barrows & Company, New York, 1958. 11¼ x 8½ in., 272 pp. Illustrated. Indexed. \$10.00.

Ever since Linnaeus, non-botanists have been having trouble with botanical keys. How can one be sure whether the tree described by Gray as having "expanding leaves heavily white-felted; mature blades glabrate, coriaceous, narrowly to broadly ovate, short-acuminate," etc., is really what one has been seeing from the train window every morning? Nor is Mathews' "long, roundish, not heart-shaped, smooth on both sides though downy when young," however much less opaque, any more conclusive. A glance at the leaves of the large-toothed poplar as shown in this book, with the notation "immature leaves very silvery for brief period," settled the question, so far as one reader is concerned, once and for all. Not that the book, or Mr. Symonds himself, would do away with keys altogether. What he does provide is a sort of primer, following which one may venture somewhat more confidently into the quicksands of botanical description. The device of using a series of pictorial keys to replace the traditional adjectives is so logical that one wonders why it had not been thought of before—though despite the thoroughness with which it has been carried out, it is to Stephen Chelminski's handsome photographs and the fidelity with which they are reproduced that the book's great and deserved success is largely due.

### THE TROPICS

By Edgar Aubert de la Rüe, Francois Bourliere, and Jean-Paul Harroy, Alfred A. Knopf, Inc., New York, 1957. 11½ x 8¾ in., 208 pp. Illustrated. Indexed. \$12.50.

Birds, mammals, and fishes of the world have already been treated in the series, originating in France, to which this volume is a distinguished addition.

So strikingly handsome are the illustrations, 16 pages of them in color, that the sole aim of the authors might seem at first glance to be the giving of pleasurable information. This is, however, anything but true. The final section, "Man and the Tropical Environment," by the former secretary-general of the International Union for Conservation of Nature and Natural Resources, is a dismaying account of the soil depletion, erosion, lowering of the water table, massacre of native mammals, and general disturbance of natural communities which have followed upon the invasion of the tropics by civilized man.

#### THE LAST PARADISE

By Helmut Handrick, Oliver and Boyd, Edinburgh, Scotland, 1957. 11 1/8 x 8 3/8 in., 158 pp. Illustrated. 45 shillings (about \$6.50).

Some of the loveliest color photographs ever to find their way between the covers of a book are contained in this record, in text and pictures, of wildlife on an estate in the Ruhr Valley of Germany. Mr. Handrick excels at close-ups—snowdrops pushing their way through the snow, a pollen-harvesting bee, a butterfly's visit to a crabapple blossom, a snail, a brooding pheasant, a spider lying in wait for its prey. There are a few landscapes, drenched with the mellow light of a traditional painting. The majority are of birds and their nestlings—the familiar hedge-sparrows, black-birds, tits, kestrels, and buzzards of central Europe. The tone of the accompanying text, a translation from the German, is perhaps rather quaint and exclamatory for Anglo-Saxon ears, and photographers may regret the absence of any technical data. Nevertheless, the charm of the photographs, and the quality of the reproduction, will be greeted with delight by whoever so much as opens the book.

#### THE SENSES

By Wolfgang von Buddenbrock, University of Michigan Press, Ann Arbor, 1958. 8 1/2 x 5 1/4 in., 167 pp. Illustrated. Indexed. \$4.00.

An entertaining, if perhaps oversimplified, introduction to one of the most complicated and tantalizing questions ever posed by the human brain: how the brain itself—or its equivalent in the simpler forms of life—translates an unknowable objective universe into something that (speaking, for once, quite literally) makes sense. The author's confirmed habit of employing slapstick of a very rudimentary sort in order to make a point may not appeal to some readers, and some of his larger generalizations are likely to provoke disagree-

ment; but this is a form of teaching which is in its own way undeniably effective, and certainly it is never dull. Dr. von Buddenbrock, a professor of Zoology at the University of Mainz, is as much at home in his field as he evidently is before a class, and his book (a translation from the German) has been given a trim and attractive format, with numerous diagrams and drawings, which makes it a pleasure to read and to handle.

#### A FIELD GUIDE TO THE BIRDS OF PUERTO RICO

By James B. McCandless, I.A.U. Press, San Germán, Puerto Rico, 1958. 8 1/2 x 5 1/2 in., 68 pp. \$2.00.

Undertaken with the blessing of Roger Tory Peterson and designed solely for use as a supplement to Peterson's "Field Guide to the Birds," this little book contains a brief outline of bird finding in Puerto Rico followed by a systematic listing of 190 species occurring on that island. Of these, 137 are birds described by Peterson, and the appropriate page reference in his guide has been given, together with a summary of its status in Puerto Rico. For the 53 others which do not regularly occur in the U. S., Dr. McCandless has provided a paragraph on field marks for identification. There are no illustrations. The price, for a paper-covered book of its size, is high; but one can only commend the author for his modest undertaking. With the James Bond "Field Guide to Birds of the West Indies" out of print and increasingly difficult to obtain second-hand, bird-minded sojourners in Puerto Rico will no doubt welcome it.

#### THE DAWN OF LIFE

By J. H. Rush, Hanover House, Garden City, N. Y., 1957. 8 3/8 x 5 3/8 in., 262 pp. Indexed. \$4.50.

Quite apart from the knowledge required, any writer rash enough to attempt a summary of what is known (and not known) concerning the origin of life must also cope with the enormous gap between the language astrophysicists and biochemists habitually use among themselves and the non-mathematical comprehension of a popular audience. This gap, though scarcely less formidable than that which continues to divide the animate from the inanimate, has here been bridged with wit, tact, and ingenuity. In places, notably where carbon compounds, amino acids, and the behavior of certain "left-handed" molecules come into the discussion, the going becomes unavoidably rather rough; but a more illuminating exposition of such matters as the Second

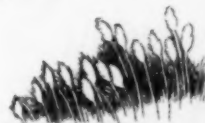
Turn to page 243



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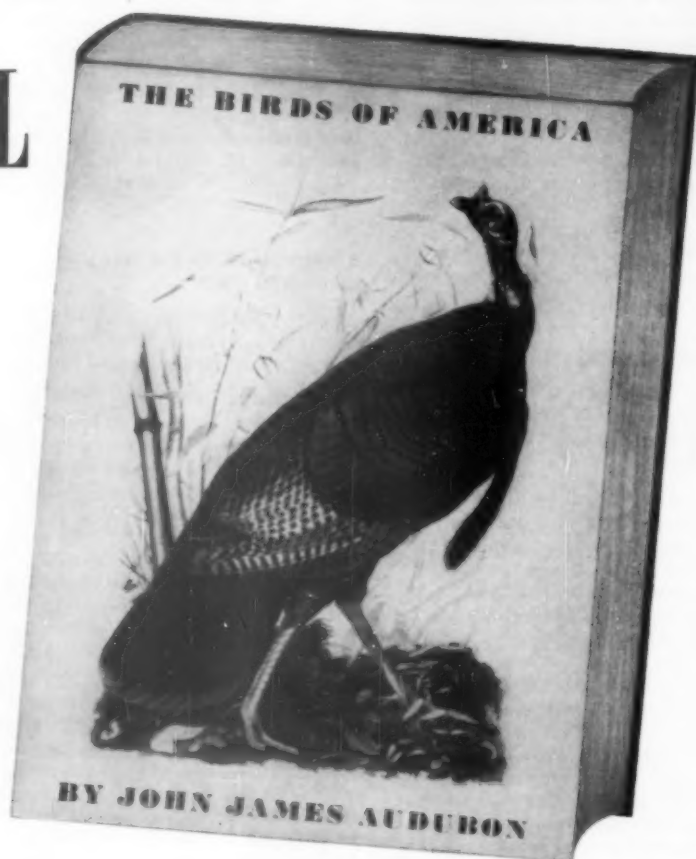
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Law of Thermodynamics, the probable origin of the solar system, and current opinion concerning life on Mars, could hardly be asked. Mr. Rush's final chapter sums up with somberly eloquent force the pass to which life, in the shape of *Homo sapiens*, has brought itself: "The fateful meaning we must see is that when man obliterates the wilderness he repudiates the evolutionary process that put him on the planet. In a deeply terrifying sense, man is on his own."

#### THE ARCTIC YEAR

By Peter Freuchen and Finn Salomonson, Putnam, New York, 1958. 8¾ x 5½ in., 438 pp. Illustrated. Indexed. \$5.95.

Not a book to be raced through at a sitting, this compendious calendar of events, in a region where weather is never for a minute to be forgotten, is nevertheless a strangely absorbing one. The information it offers, by turns, matter-of-fact, amusing, weird, and occasionally downright gruesome. Even when it is strictly scientific, the writing has something of the pungent quality of direct address and of immediate sensation, so that its cumulative effect upon the reader is of having, sometime or other (in a previous incarnation as a polar bear, perhaps) lived in the Arctic himself. Combined with this is the peculiar charm of the Eskimos, that cheerful race whose way of life is so uniquely adapted to the rigors of environment that government among them is unknown. Besides the many fascinating details on their housing and raiment, their social conventions, and their rich if occasionally bizarre cuisine, there is a veritable mine of data on the movements, the adaptations, and the life histories of the birds, mammals, fishes, insects, and plants which somehow garner an existence there from the sparse soil, the short summers, and chilly seas.

#### THE FEDERAL LANDS: THEIR USE AND MANAGEMENT

By Marion Clawson and Burnell Held, published for Resources for the Future, Inc., by The Johns Hopkins Press, Baltimore, Maryland, 1957. 9¼ x 6 in., 501 pp. Illustrated. Indexed. \$8.50.

At present about 400 million acres, or something like a fifth of the total area of the United States, are owned and administered by the federal government, and in the opinion of the authors of this book, the pattern of public ownership is not likely to undergo any very sweeping alteration. On the assumption, accordingly, that "the lessons of the past have relevance for the future," they have here treated the history, uses, and administration of the public lands in some detail. They conclude with a chapter on probable future developments,

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in particular the proposed establishment of a Federal Land Corporation. An appendix summarizing the main laws affecting federal land management, and another comprising 59 tables of statistics on national parks, forests, wildlife refuges, and other public lands, give the book added value as a reference.

## JUNIOR BOOKS

### ANIMAL TAILS (10-14)

By George F. Mason, William Morrow & Company, New York, 1958. 8 $\frac{3}{4}$  x 5 in., 95 pp. Illustrated. Indexed. \$2.50.

The charm of tails, we suspect (recalling a young lady we once heard of, who wished for such an appendage so that she could wear it draped over her arm like a boa) is that they appear to serve no function other than sheer gratuitous adornment. The purpose of this agreeable essay—though it does indeed contain a chapter on decorative tails, in which such fantasies as the birds of paradise, the motmots, and the Yokohama rooster naturally figure—is to show how charmingly useful they are. In writing of prehensile tails, tails for support and balance, for protection, for food-storage, and as weapons, warning devices, and signs of emotion, Mr. Mason has the direct but casual manner of a person talking—an admirably effective approach to readers of any age.

### WILD ANIMALS OF THE FAR WEST (12 up)

By Adrien Stoutenburg, Parnassus Press, Berkeley, California, 1958. 10 x 7 $\frac{1}{4}$  in., 150 pp. Illustrated. Indexed. \$3.75.

Older young readers are not often honored with a book produced with the care and good taste which distinguish this one. Ruth Robbin's two-color drawings, which occur on nearly every page, have great appeal; indeed, where the larger and fiercer mammals are concerned this quality becomes a fault, but the peculiarly alert, quivering, furry look of the smaller rodents (rats and mice above all) is admirably rendered. The text, a pleasant blend of anecdote with formal life history, is extensive enough to be informative to adults as well as teen-agers.

### BUSY WATER (6-9)

By Irma Simonton Black, Holiday House, New York, 1958. 9 $\frac{3}{8}$  x 7 $\frac{1}{2}$  in., 32 pp. Illustrated. \$2.50.

A lively and graphic account of the water cycle, which should succeed very well in giving very young people an idea of the unity-in-complexity of natural processes. Jane Castle's illustrations are a fitting accompaniment, and those showing a landscape in the rain have particular charm.

## THE ELEPHANT HUNTER

Continued from page 223

Fortunately, I was to find help from many sources. There was a list of folios in the Union Library Catalogue. Always I had the cordial cooperation of librarians, and of print dealers and collectors who had records of auctions and private sales. At times, the wanted information came to me from most unexpected sources. One of my birding companions at Little Compton is Brian Harrington, a young man who was a student at the Brooks School, North Andover, Massachusetts. From him I learned that the Brooks School at one time possessed a set which had been sold to the University of Illinois. Then, too, I made a study of auction records (Book Prices Current) and learned from them the location of numerous sets.

Soon after I had begun the work of digging out facts in connection with the history of the acquisition of each set, I was to find that, while an institution such as Harvard University was listed as an original subscriber, it was not the university as such, but a group of individuals (in this case, overseers) who personally raised the necessary funds, usually \$1,000, for the subscription.

In the minutes of the Academy of Natural Sciences of Philadelphia, I found the names of 11 members as "donors" of the Audubon set. In 1831, when the Providence Athenaeum was established, there was already in existence the Providence Library. It is quite possible that, in 1832, when there was presented to the Trustees of the Athenaeum "a proposal that the Providence Athenaeum should be possessed of Audubon's great work on Ornithology as being admirably calculated for giving a character to and establishing permanently the reputation of the institution," they were hoping to steal a march on their sister, but older institution. A few years later the two were to combine. But again the subscription cost was raised by 12 members, who kept title to the folio in their own names, until they were later repaid by funds of the Athenaeum.

It was in Georgia that I received my greatest disappointment. In the city of Savannah, there had originally been six subscribers, all of whom had been obtained by William Gaston, a prominent, wealthy,

and influential merchant. However, while in Savannah, even with the aid of Mrs. Hawes of the Georgia Historical Society, I was unable to find a trace of even one of these sets. There remains the question of how many sets were actually received in Savannah, inasmuch as four of the original subscribers died before Audubon's "Birds of America" was completed in 1838.

Another Georgia subscriber was Thomas Butler King of St. Simon Island. It appears likely that this set of the folio is now in the library of the University of Indiana. Margaret Davis Case, who is well-versed in the history of the Sea Island country, was very helpful in establishing the history of the King set.

Farther north, in the museum at Charleston, South Carolina, is a set with a most interesting history. The original subscribers to this set Audubon had labeled the Charleston Natural History Society. This society was composed of a most outstanding group of 12 citizens of Charleston. Space permits me to mention but two of them: One was the Reverend John Bachman, a Lutheran Minister, who had been responsible for Audubon receiving several subscriptions in South Carolina and who was the joint author with Audubon of the "Viviparous Quadrupeds of North America"; the other the Reverend Samuel Gilmore, a Unitarian Minister, Harvard graduate, and author of "Fair Harvard." A special stand was made

### NOTE TO READERS

We shall be glad to have your comments about articles in *Audubon Magazine*, or to hear about any of your personal experiences with wildlife which might be an interesting contribution to the letters column of *Audubon Magazine*.

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for this set, by means of which it was possible to take a volume to the home of a subscriber when he desired to look at it.

In Canada, there are at the present time, five sets of the folio. One of the most remarkable is at the Legislative Library in Fredericton, New Brunswick. The four volumes are bound in turkey red morocco, beautifully hand-tooled by the English binder, J. Wright. The original subscriber is as yet undetermined. The set was purchased at auction in New York City in the 1850's. The librarian, Maurice Boone, and his staff are rightfully proud of this set.

A most unique display of the prints of the Elephant Folio is to be found at the Manoir Richelieu, Murray Bay, Canada. Here, over 200 of the plates have been framed and are hung on the walls of the main dining salon. The copy at the Library of Parliament in Ottawa requires additional study, since many of the plates bear penciled notations. The belief has been expressed that these were inscribed by Audubon himself.

At Washington, the Library of Congress has two complete sets of the folio. One of these was obtained as an original subscription, listed by Audubon as "Library of Congress of the United States, Washington City." The other copy came to the library from the War Department; the detailed history of this set is not known.

In 1836, Audubon presented a set of loose prints, 435 in number, to his friend, David Eckley, of Boston. Eckley had been helpful to Audubon in supplying him with needed bird skins of desired specimens. I found out that these plates had come into the possession of Robert Sayre, of South Bethlehem, Pennsylvania. In 1917, when the Sayre Library was sold at auction in Philadelphia, "The Birds of America" went to an undisclosed buyer for \$3,200. I was particularly anxious to locate this set. Great was my joy when I discovered that the set of loose prints at the National Gallery of Art in Washington, presented to the gallery in 1946 by Mrs. Walter B. James, in memory of her husband, Dr. Walter B. James, and his brother Norman James of Baltimore, was the Eckley set. It was Norman James who had been the "undisclosed buyer."

Early in my research I saw two uncolored plates at the Boston Athenaeum. While working at the American Museum of Natural History, I learned that in 1925 two granddaughters of Audubon had given to the museum a nearly complete set of 435 plates, *uncolored*. Also, on a visit to Cornell University, I saw at the home of Dr. Arthur A. Allen a print which had originally been uncolored, but which had been colored for him by Louis Agassiz Fierstein.

Many other interesting stories have been uncovered during the "elephant hunt." Let me refer briefly to a few of these. In the Sterling Library at Yale, there are two sets; in one of these, the mistake on Plate II (the bird is actually the yellow-billed cuckoo) was never corrected, for the title reads "Black Billed Cuckoo, *Coccyzus erythrophthalmus*." Sets have been destroyed by fire, notably at the State Library at Albany, New York, and at the Parliamentary Library in Quebec. Other sets have been broken up. How many readers know that in 1931 R. H. Macy sold a complete set of the 435 prints? The wild turkey plate was offered at \$374, while some plates were offered as low as \$4.96; at that, the offering prices for the entire set totaled \$14,357.98. In the spring of 1957 another set was broken up by a New York print dealer; this time, according to the dealer's offering circular, the asking price for only 380 of the 435 prints totaled more than \$35,000.

There still remain many more months of "elephant hunting," with sets to be seen at the universities of Illinois, Indiana, Michigan, and Texas, and at libraries, in Chicago, Milwaukee, Minneapolis, St. Paul, Louisiana, and California. There are also two more in the possession of private individuals to be examined. And finally, until similar research is done in Europe, principally in England, Scotland, and France, the "elephant hunt" will not have been completed.

In another sense, the hunt will never be finished. To an alert observer, there will always pop up some answers to the unsolved mysteries as to the whereabouts and history of hitherto untraceable sets, or even single prints, of Audubon's monumental work, "The Birds of America."—THE END.

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All too soon Ring had reached the age when he should have been able to forage for himself. He should be returned to the woods, but even though I knew it was wrong not to do so, I could not bring myself to part with him. In the weeks that we had been so closely associated I had grown very fond of Ring. He was constantly active; his front paws were forever seeking, and many were the spells of gloom that Ring freed me from, with his pant-leg-shaking invitation to wrestle with him.

Since it is unlawful in Ohio to keep a raccoon in captivity during the closed season, the local game authorities gave me special permission to keep Ring. When he grew too large to keep in the house all of the time I had a special box made for him outside; one in which he could gain refuge from dogs. I had him fitted with a collar and kept him on a leash because his curiosity would have soon led him astray.

Ring had a canny instinct for detecting maliciousness both in humans and in animals. Across the street lived a fox terrier that delighted in pestering him. The dog would stand just beyond the length of Ring's chain and yelp at him. Ring usually ignored the dog, but even a raccoon could take only so much. One day when the terrier came into the yard, Ring ran quickly into his box. This new action surprised the terrier, but it also gave him courage. Bravely he came close to the door of Ring's box, and started barking. Suddenly, the raccoon rushed out of his house and nipped the astonished terrier on the nose. The fox terrier, a thoroughly frightened dog, ran for home wailing like a banshee. He never came back. With Joe, the sleepy Airedale, and Ring, it was like and like at first sight. Joe would come into the yard and amble over to where Ring was tied, then a playful rough and tumble game would follow.

A small boy and girl passed our house each evening on their way home from school. They always stopped for a few minutes to play with Ring and to give him small tid-bits saved from their lunch. After they had stopped a few times, Ring began to look forward to their visits. When he saw them coming down the street, he would

frisk about excitedly. The boy and girl, usually arrived around four o'clock, and Ring knew it. Many were the times that I watched Ring, at quarter-to-four, stop whatever he happened to be doing to stand and look intently down the street. He was waiting for the children.

At least twice a week Ring and I would take a ride in our car. This held the greatest fascination for him. As we rode along, he would stand on my lap and peer out of the window. Sometimes I would roll the window down and let him lean far out. On these rides I kept him on his leash. When he tired of just looking at the passing countryside, he would curl up on my lap and sleep. But as soon as we entered a city's limits, the sounds would instantly awaken him. The hustle and bustle seemed to enchant him. If we passed a restaurant or a bakery, the wafting odors made him wrinkle his nose and lean farther out the window. Our rides were always climaxed with a round or two of hamburgers.

One memorable day, Ring and I were alone in my room. I had unleashed him and he was busy exploring every nook and corner while I was writing. When using my desk

## AUDUBON CONVENTION— 1958

The 54th Annual Convention of the National Audubon Society, with its branches and affiliated societies, will be held in New York City, November 8 to 11, inclusive. Headquarters will be at Audubon House, 1130 Fifth Avenue. Members and member-groups should receive the convention program early in October. The convention will end with the annual dinner on Tuesday evening, November 11.

## NOMINATIONS

The official Nominating Committee for directors of the National Audubon Society, consists this year of Mr. R. Gordon Wasson, Mr. Charles G. Woodbury, and Mr. Wheeler McMillen (Chairman). If any member wishes to submit suggestions to the committee, a letter may be directed to Mr. Wheeler McMillen, Farm Journal, Washington Square, Philadelphia, Pa.

I always got into a regular desk chair, as the construction of the wheel chair made it impossible to use it near the desk. Something made me look up from my writing. I saw Ring making his way to the top of a book case, by way of a chair in a corner of the room. On that book case, to which Ring was climbing, there was an electric table lamp. It was not used much and I remembered that my little sister had turned the light on to test the bulb in it before snatching it away. For some reason, typical of children, she had just unscrewed the lighted bulb and had not bothered to turn off the lamp switch. Ring was moving toward it, and I knew it wouldn't take long for one of his prying paws to find its way down into that live socket. *The electrical shock might kill him!*

I had never been able to teach Ring to come to me when I called to him. Now, with only the thought of keeping Ring from reaching that lamp, I stood up and took a half step toward him. Then I crumpled to the floor. *But I had actually stood on my feet, and I had taken the first step since I was paralyzed!* Was I dreaming? Had I really been standing, or had I merely slid off the chair? I didn't know, but hope began to grow within me. Ring, thinking this was a new game, was soon at my side where I lay on the floor. Several weeks later my family happily watched as, ever so slightly, I moved my toes.

Months later, when I could walk again, I took Ring to a wooded game reserve. I knew that I had to let him make his choice between his freedom in the wild, or of being in my company for the rest of his life. When I took off his collar and leash, he stood and looked strangely about him, but his curious nature soon led him on an investigating tour. I stayed the afternoon with him in the woods, and when I started to leave that evening, Ring was enjoying himself in the topmost branches of a tree. I walked straight away, not trusting myself to look back. Just as I was leaving the woods I heard familiar footsteps pattering behind me. I stopped. Then a happy boy and a tired raccoon headed for home.

Years later Ring died of natural causes, but in my heart he lives on, as he will forever.—THE END



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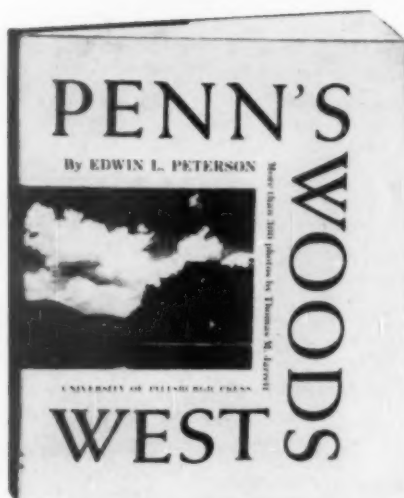
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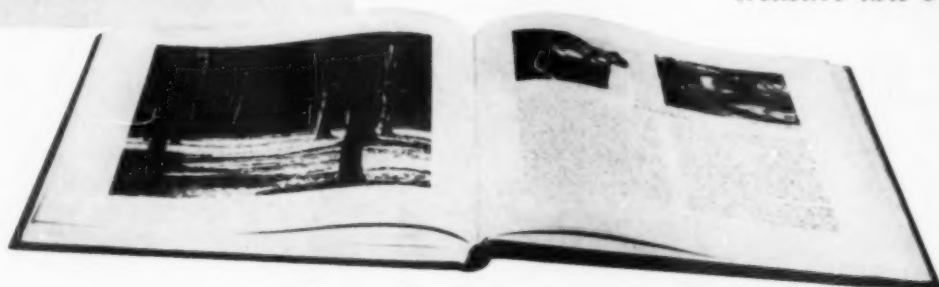
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